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Master's Thesis
and
Field Study Abstracts

July 1996/June 1998

St. Cloud State University
St. Cloud, Minnesota

MASTER'S THESIS AND FIELD STUDY ABSTRACTS

FORWARD

This publication, the fourteenth in a series which began in 1957, contains the abstracts of Master's Theses and Field Studies completed by graduate students of St. Cloud State University. The bulletin contains those theses and field studies completed during the period from July of 1996 through June of 1998.

A bound copy of each thesis or field study is on file in the Learning Resources Center, which houses the library on this campus. The library copy of each thesis and field study is available for use on an interlibrary loan basis.

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CONTENTS

COLLEGE OF EDUCATION

CHILD AND FAMILY STUDIES

Adolescent Pregnancy: Locus of Control and Gender Orientation as Influence by Linda Lee Anderson, M.S.	1
Core Issues Experienced by Parents who Form Families Through Adoption by Judy M. Arnesen, M.S.	1
Cultural Sensitivity Levels of Early Childhood Special Education Professionals by Lori J. Derus, M.S.	2
The Relationship Between Kindergartners' Temperament and Behaviors Seen at School and Home While Adjusting to Kindergarten by Shannon Eileen Dufresne, M.S.	2
An Early Childhood Screening Project by Christine D Eckhoff and Nancy E. Holt, M. S.	3
Effects of a Gender-Equitable Curriculum on Preschoolers' Attitudes and Behavior by Shelley Frerichs, M. S.	3
Parenting the Early Adolescent: Understanding Parent Needs and Support Strategies by Mary Lee Garbe, M. S.	4
Children's Perceptual Flexibility Toward Diversity: Ecological Approach, Cross-Cultural Study by Fukiko Hirose, M. S.	4
The Comparison of Low Concept Scores on the Dial-R to Learning Difficulties in the Elementary Years by Beth M. Hoeg, M. S.	5

The Relationship of Parent-Rated and Teachers-Related Temperament of Kindergartners and Behavior Observed at Home During the Adjustment to Kindergarten by Nancy Lorraine Wallace Jacob, M. S	6
The Incidence of Sensory Processing Disorders in a Zero to Three Year Old Special Education Population by Janelle Parsons-Kaufenberg, M. S	6
A Case Study of Resources for Pregnant and Parenting Teens in the Foley, Minnesota Area by Janet M. Keaveny, M. S	6
Perspective of Indian (South Asian) Fathers' Involvement Attachment with Their Children by Sriverdhini Mohan, M. S	7
A Comparison of Two Q-Sort Attachment Measures in a Group of Family Literacy Parents and Their Young by Jenelle S. Peters, M. S	7
Parents' Beliefs About Their Developing Girls and Boys by Antoinette M. Sveom, M. S	8
Grandparents' Reactions to Having a Grandchild with Down Syndrome by Diane Williams-Johnson, M. S	9

EDUCATION ADMINISTRATION

Assisting an Identification Model for the Gifted/Talented Students in a Small, Rural School District in Central Minnesota by Wendie M. Anderson, M. S	9
Security Methods of Minnesota Secondary Schools by Mary Pat Cumming, M. S	10
Factors Affecting Site-Based Decision-Making in Elementary Schools by Barbara Kearn, M. S	11

A Survey of Middle School Services For Minnesota's Gay, Lesbian, and Transgender Public School Students by Rod Metzger, M. S.	12
Computer Utilization in Rural Minnesota Elementary Schools by Barbara J. Rubie, M.S.	12
The Secondary School Principalship Hiring Practices and Procedures by Christy A. Werder, M. S.	13
The Relationship Between Selected Factors of Parental Confidence and Voting Behavior in a 1994 Referendum Levy in a Minnesota Suburban School District by Deborah A. Williams, M.S.	14
Preschool Services for Children with Disabilities: Topical Guidebook by Naomi O. Younggren, M.S.	14

ELEMENTARY EDUCATION

Writing Across the Curriculum: Success for Middle School and High School Students by Kathy Hammill, M.S.	15
Contexts of Student Leadership in an Elementary Multi Age Classroom by Penelope D. Jones, M.S.	15
A Study of the Use of the Internet in an Elementary Science Program by Teresa Ksiazek Lueck, M.S.	16
Perceptions and Attitudes of Inclusive Teacher Education Program Students by Lynn Paige Pehrson Millar, M.S.	17
Mastery Learning: A Study of Review Intervals by Stephen J. Petroski, M.S.	18
Teacher Knowledge, Attitudes, and Perceptions of the Results-Oriented Graduation Rule by Joseph E. Telfair, M.S.	18

Communication and Collaboration in a Mixed Age Classroom by Kimberly S. Valentine, M.S	19
---	----

INFORMATION MEDIA

Attaining Job Satisfaction in the Workplace Setting by Katherine A. Koepke, M.S	19
--	----

MIDDLE/JUNIOR HIGH SCHOOL EDUCATION

Sex-Role Stereotyping and Female Adolescents by Kemberly Timlin, M.S	20
---	----

PHYSICAL EDUCATION

Flexibility: The Effects of a Flexibility Program on Eighth Grade Students by Daniel J. Brinkman, M.S	21
The Alcohol Consumption of First-Year Student-Athletes at a Midwest Women’s Private Liberal Arts College by Laure L. Schingen, M.S	21
Establishing Norms for Eighth Grade Students Using the President’s Challenge Physical Fitness Program by John F. Utter, M.S	22

APPLIED PSYCHOLOGY

Effects of a Token vs. Non-Token Reinforcement System in Teaching Autistic Children by Darin Todd Ackre, M.S	22
The Use of Systematic Desensitization and Study Skills Training in Treating Test Anxious Undergraduate College Students by Pamela M. Clausen, M.S	23
Bringing “Virtual Reality” Into the Traditional Behavior Analysis Animal Laboratory by Morten Haugland, M.S	23

A Comparison of Prompting Procedures Applied During Intensive Behavioral Intervention by John Francis Miller, M.S	24
Effect of Substitute Pairing on Disruptive Behavior by Octavian Rajuuta Nephilim, M.S	24

READING CONSULTANT

The Implementation of the Communication 2000 Curriculum and it's Relevancy to the Minnesota Graduation Standards by Marica K. Bouchie, M. S.	24
---	----

SPECIAL EDUCATION

Differences in the Leisure Activities of Mathematically Advanced Secondary School Students by Mary L. Cornell, M. S.	25
A Study of Screening Tools Used to Identify ADHD by Jeffrey E. Cziok, M. S.	26
Promoting Healthy Conflict Resolution Through Peer Mediation by Nancy C. Dockendorf, M. S.	26
Job Satisfaction and Attrition: Critical Issues for Special Educators by Julie Ann Gross, M. S.	27
The Impact of Chronological Age on Referral to Special Education by Kelly Marie Haws, M. S.	27
The Employment Status of Young Adults with Learning Disabilities: A Follow-Up Study of Former LD Students From Central Minnesota by Tammy L. Lacey, M. S.	28
Teachers' Attitudes on Integration by Annemarie Nelson Loehning, M. S.	28
A Study of Family Assets and the Master Student by Cheryl Lynn Mickelson, M. S.	29

Collaborative Consultation-A Means to Achieve Math Success in an Inclusion Setting by Gary V. Milacnik, M. S.	29
A Follow-Up Study of Early Childhood Special Education Students Transition into Kindergarten by Paula Pazzelli-Marks, M.S.	30
The Effect of the Process Approach to Writing on Students with a Learning Disability by Sandra L. Perrin, M. S.	30
Community Dialogue in Reforming Educational Services for Emotion/Behavioral Disorder by Vickie L. (Brandt) Pitney, M. S.	31
Behavior Planning Center Evaluation by Brenda A. Schumann, M. S.	31
A Follow-Up Evaluation of the Paul Bunyan Special Education Cooperative, Brainerd, Minnesota by Colleen C. Seevers, M. S.	32
Analysis of Parents' Decision to Litigate by Lynnea G. Snodgrass, M. S.	33
Science Performance of Students with Learning Disabilities in Collaborative Setting by Lisa C. Sorensen, M. S.	33

SOCIAL RESPONSIBILITY

The Hospitality Project: Increasing Retention of American Indians in Higher Education by Thomas P. Andrus, M. S.	34
Classroom Assessment Techniques: Perceptions of Effectiveness for Teaching Diverse Student Populations in Higher Education by Jenine B. Helmin, M. S.	34
Black Student Attitudes Toward Black Leadership by Tia Marka, M. S.	35

SPORTS MANAGEMENT

The Effectiveness of the College One Back and Two Back Offenses in the Big Ten Conference by John D. Lewis, M.S.	36
NCAA Division I Graduation Rates and NCAA Division II Persistence Rates by Matthew M. Reimer, M. S.	36
An Analysis of the Three-Point Field Goal Percentages from the Theory of "Inside-Out" by James L. Russell, M. S.	37

SR. HIGH EDUCATION

The Effects of Block Scheduling on Science Electives by Todd B. Bergstedt, M. S.	37
The Relationships Among Self-Esteem, Achievement, Gender, and Participation in High School Music Performance Groups by Mark H. Hagemeyer, M. S.	38
The Implementation of a Family/School/Community Partnership Program by Pamela Ramstad, M. S.	39

EXERCISE SCIENCE

Reproducibility of Excess Postexercise Oxygen Consumption Following Submaximal Cycling in Females by Robyn A. Abear, M. S.	39
A Comparison of High School and College Long Snapping Fine Techniques by Mark Blegen, M. S.	40
Can Common Factors be Used to Predict Accuracy in the Basketball Free-Throw by Tyler H. Gibson, M. S.	40
Ice and In-Line Skating Kinematics in Collegiate Hockey Players by William Sean Goldsworthy, M.S.	41

The Effects of a Competitive Season on Fitness and Strength Levels in NCAA Division II Female Basketball Players by Rosalie K. Hayenga, M.S.	41
Accumulated Oxygen Deficit as a Predictor of On-Ice Hockey Skating Performance in College Hockey Players by Jamie A. Jerdee, M.S.	42
Does Blood Urea Nitrogen Level Increase with Intensity of Running Training in College Age Males? by Paul M. Kammermeier, M.S.	42
Assessing the CPX Express Respiratory Gas Exchange System Using Male Athletes by Amy C. Keranen, M.S.	43
Creatine Supplementation and Multiple Skating Task Performance in Division I Hockey Players by Benjamin Carter Noonan, M.S.	43
Can Throwing Cords or Arm Ergometry Enhance Throwing Velocity in Collegiate Baseball Players by Dean Alan Stulz, M.S.	44
Predictability and Validity of Best Depth Jump Box Height by Joseph A. Vardas, M.S.	45
Selected Subjective and Objective Clinical Exam Findings: Are They Predictors of Cervical Pain in Atrumatic Computer Workers by Larry S. Wallner, M.S.	45

FINE ARTS & HUMANITIES

ART

Feasibility of Using Cooperative Learning for Elementary Education Majors Enrolled in Pre-Service Art Courses at Higher Institutions of Learning by Susan Heather Hendershot, M.A.	46
--	----

ENGLISH

The Rhetorical Function of Tragic Components in American <i>Film Noir</i> : Appropriating Aristotle's Poetics as a Tragedy <i>Noir</i> Critical Paradigm by Eric Thomas Beckstrom, M.A	47
The Semiotic Consciousness: Virginia Woolf, William Faulkner, and James Joyce by Joseph Gregory Brister, M.A	48
A Usage Study of Subject-Verb Agreement by Susan Ausmus Engel, M.A	48
Abstract Strategies for Nonnative English Writers Publishing in Scientific and Technical Journals by Arlene K. Erickson, M.A	49
Linguistics at the Secondary Level: A Course for High School Students by Robert Gardner, M.A	50
Spirituality and Ecological Awareness: An Ecofeminist Exploration of Kathleen Norris' <i>Dakota: A Spiritual Geography</i> and Linda <i>Hogan's Dwellings: A Spiritual History of the Living World</i> by Heidi R. Gomez, M.A	50
Gender Differences in Group Discussion Dynamics in the ESL Classroom by Ewa M. Grave, M.A	51
The Satanic Versus Revisited: A Feminist Perspective by Janet Marie Hagen, M.A	51
People Always Clap for the Wrong Things: A Comparative Analysis of Existentialist Themes in Salinger's <i>The Catcher in the Rye</i> and Camus' <i>The Stranger</i> by Holly J. Hassel, M.A	52
St. Cloud State University's ESL Writing: Testing and Courses by Randa Jean Holewa, M.A	53
The Study of Television Rhetoric in the Composition Classroom by Patricia A. King, M.A	53

A Rhetorical Analysis of the Speeches of Ellison's <i>Invisible Man</i> Based on Kenneth Burke's Concepts of Form and Identification by Nike S. Lawal, M.A	54
The Dramatic Principle by Nathalie M. Lewis, M.A	54
An Epideictic Understanding of Student Composition by Kirk J. Mann, M.A	55
The Use of Taped Stories to Teach Ending -S Sounds to ESL Students by Julia F. Malone, M. A	55
International Student Problems in General Education Courses by Rodney W. Pederson, M.A	56
The Acquisition of Simple Past Tense Through Teacher Modeling in Dialogue Journals by Lynda L. Shoff de Gozalez, M.A	57
Discourse Theory for A Postmodern Environment: Rehabilitating the Epideictic Genre by William G. Spath, M.A	57
Moving the Centre Confronts Southern Africa: The Implications of Employing the Work of Ngugi Wa Thiong'O to Explicate the Texts of Bessie Head by Patricia Taylor, M.A	58
Quest for Authority: An Analysis of the Intrusive Author in <i>Uncle Tom's Cabin</i> and <i>The Scarlett Letter</i> by Irene Voth, M.A	58
Positionality: Reevaluating Naturalist Writing by Emily D. Wicktor, M.A	59
Contrastive Rhetoric: A Comparison of Chinese and English Expository Writing by Wu Baiying, M.A	59

SPORTS MANAGEMENT

Perceptions of NCAA Division I Basketball Head Coaches Regarding Stipends for Student Athletes by Erich J. Bacher, M.A	60
--	----

The Effects of Mentor Programs and Athletic Handbooks on Graduate Assistants and New Coaches in an Athletic Department by Matthew G. McGregor, M.A	61
---	----

COMMUNICATION MANAGEMENT

The Director’s Role in Creating and Managing an Excellent Public Relations Department by Loretta Bronson, M.S	61
Normative Study of Oral Volitional Movements of Five -Year Old Children Elicited Under Two Stimulus Conditions by Christine M. Fletcher, M.S	62
Missing the Mission and Purpose of Public Broadcasting: The State of Contextual Training in Public Radio by Anthony J. Hunt, M.S	63
The Treatment of Public Relations in Introductory Mass Communication/Journalism Courses by Kevin J. Young, M.S	64

COLLEGE OF SCIENCE AND TECHNOLOGY

BIOLOGICAL SCIENCES

The Ecology of the American Bittern in Northwest Minnesota by Wayne L. Brininger, Jr., M.A	65
Nesting Behavior and Nest Success of Scarlet Tanagers at Sherburne National Wildlife Refuge by Jane M. Hartwig, M.A	65
Lake George Water Quality Evaluation and Management Options by Valerie E. Hedin, M.A	66
Benthic Diatom Community Biomonitoring Data Base and Protocol Recommendations, Upper Headwaters, Mississippi River, Minnesota by Nathaniel A. Hemstad, M.A	67

A Comparative Study of the Macro Invertebrate Assemblages and Water Quality in Two Central Minnesota Trout Streams by Daniel R. Jolly, M.A	68
The Breeding Status of Birds at Crane Meadows National Wildlife Refuge in Central Minnesota by Robert A. Maercklein, M.A	69
A Molecular Analysis of Rat Kidney L-Arginine: Glycine Amidino-transferase Gene and Gene Products by Marcia Lynn Thomson O'Brien, M.A	69
Winter Aspects of Prairie Chicken Ecology in Northwest Minnesota by Eric L. Rosenquist, M.A	70
A Survey of the Macro Invertebrate Assemblages and Water Quality of a Central Minnesota Trout Stream by Brian D. Rudolph, M.A	71
Breeding Birds and Associated Upland Habitats of Sherburne National Wildlife Refuge by Kent A. Sundseth, M.A	72
Aquatic Insect Trapping and Separating Methods for Wetland Sampling by Melanie S. Waite, M.A	72
Analysis of Greater Prairie Chicken Open Space Requirements Using a Geographic Information System by Sandra L. Wilmore, M.A	73
The Effects of Relaxin, Atrial, Natriuretic Peptide (ANP), and the Interaction of theca and Granulosa Cells on Porcine Ovarian ANP and Progesterone Production During in Vitro Luteinization by Huamei Heidi Zhang, M.A	73

INDUSTRIAL STUDIES

The Development of a Template Process Safety Management Program with Recommendations for Implementation in a Distillery Setting by Jim Fowler, M.S	74
An Assessment of Technology Education in Middle Level Schools of South Dakota by Steven A. Thiesse, M.S.	74

An Assessment of Manuel Drafting in 2-Year Post Secondary Architectural Drafting Programs by William B. Vennes, M.S	75
---	----

MATHEMATICS & COMPUTER SCIENCE

A Genetic Algorithm for the Minimum Weight Triangulation Problem by Kerry Capp, M.S	76
True Identity: Panographic Pattern Matching Techniques by Captain Mark J. Lundtvedt, M.S	76
Instructional Multimedia: From Theory to Practice by Yue Shen, M.S	77

COLLEGE OF SOCIAL SCIENCES

APPLIED ECONOMICS

An Empirical Analysis of the Relationship Between Money and the Aggregate Production Function by Kadiri Liassou, M.S	77
Budget Deficits and Long-Term interest Rates: Evidence Form the Error Correction Model by Yeah Boon Siew, M.S	78

CRIMINAL JUSTICE

Minnesota Probation and Parole in Peril by Terryl Arola, M.S	78
Demographic and Violation Characteristics of Inspected Minnesota Hazardous Waste Generators: 1994-1996 by Lee Patrick Gearhart, M.S	79
An Integrative Review of Criminological Theory: Determining the Extent to Which the Scope Conditions of Time and Location have Been Addressed by Douglas L. Gilbertson, M.S	79

Reducing Juvenile Delinquency Through After-School Activities in Minneapolis, Minnesota by Richard Earl Kittilson, M.S	80
The Effects of a Three Month, Prison-Mandated Chemical Dependency Treatment Program on Inmate Discipline Reports by Jeffrey D. Spies, M.S	80

GEOGRAPHY

Urban Development Patterns: The Utilization of a Present Land Use Classification System as Applied to Historical Aerial Photographic Data; St. Louis Park, Minnesota, 1937-1994 by Gary Gelzer, M.S	81
An Integrated Spatial Analysis Tool for Electrical Utility Planning by Eric Goodman, M.S	82
Assessing ARC/INFO'S Region Feature Through Development of a Forest Concealment Management Zone at Camp Ripley Training Site, Minnesota by Peter H, Knutson, M.S	82
The Study of Minnesota's Orderly Annexation Statute: A Viable Alternative for Urban Growth; City of St. Joseph and St. Joseph Township, Stearns County, Minnesota by Katherine Kiljequist, M.S	83
A Customized Computer Application for Database Integration and Spatial Analysis by Brian K. Schreurs, M.S	83
Improving Natural Resource Management Decisions: An Application of Executive Information Systems Concepts in Geographic Information System Development by Mark A. Wald, M.S	84
Aviation Planning for Afghanistan Using Geographic Information Systems by Michael Scott Zibell, M.S	84

GERONTOLOGY

Medicare Reimbursement Choice: A Case Study of Decision Making in a Small Health Maintenance Organization by John Aspholm, M.S	85
--	----

Sister-Sister Social Support in Later Life by Mary J. Bauer, M.S . . . . .	.85
Developing a Model for Alternative Housing and Programs for Older African American Women by Betty A. Bush, M.S . . . . .	.86
Barriers and Motivators Perceived by Older Persons to Completing Advance Directives by Michele M. Carroll, M.S . . . . .	.86
Effectiveness of Assisted Living Under Minnesota's Housing with Services Act: Residents' Comprehension and Satisfaction by James F. Dostal, M.S . . . . .	.87
Spirituality in the Lives of Older Adults: A Rural Perspective by Connie M. Feig, M.S . . . . .	.87
Alzheimer's Disease Caregiver Support Groups: Structure, Format, and Perceived Benefits by Erin Marie Jensen, M.S . . . . .	.88
Personal Competency and Cultural Norms: A case Study of Integrating Seniors with Developmental Disabilities into a Senior Center by Barbara A. Kuhlman, M.S . . . . .	.89
The Effect of Chronic Illness on Life Satisfaction in Aging Women Religious by LaVonne Schackmann, O.S.F., M.S. . . . .	.89
A Comparison of Mature and Non-Mature campers in Minnesota by Catherine Norman, M.S. . . . .	.90

HISTORY

Colin Francis Macdonald: A Voice of Accommodation in the German American Community of Stearns County, Minnesota, 1875-1919 by Patrick M. Daniel, M.A. . . . .	.90
An Analysis of Pantown-On-The-Mississippi: A Quasi- Model Company Town by John S. Gutteter, M.A. . . . .	.91
A History of the Minnesota Correctional Facility, St. Cloud by Michael J. Hargesheimer, M.A. . . . .	.91

Camp Ripley 1937-1945 by Lisa L. Nuehring, M.A.	92
An Analysis of Popular Reaction to Civil War Conscription in the State of Minnesota by David A. Omersa, M.A.	92

SPECIAL STUDIES

Foreign Price Sector and U.S. Inflation: An Empirical Investigation by Shahzad Ahmad, M.S.	93
Girls Ages 9-12 and Participation in Sport by Kevin Edward Babcock, M.S.	93
Analysis of the Quality of Audio Data Received in Real Time Over Networks by Michael D. Bauer, M.S.	94
In the Interest of National Security by Daniel J. Becker, M.S.	94
Faculty Members Willingness to Provide Academic Accommodations for Students with Disabilities by Tammy Becker, M.S.	95
Teaching Communication Skills: Are We Meeting the Needs of Business and Industry? A Survey of Employers of Ridgewater Graduates by Julie Ann Lindstrom Bredeson, M.A.	96
Comparison of Perception of Quality of Life in Patient with Coronary Artery Disease and Peripheral Artery Disease by Wendy A. Pederson Brown, M.S.	97
Cross-Cultural Education: The United States and Japan by Julie J. Nordine Condon, M.A.	97
Smokeless Tobacco Effects on Batting Abilities and Psychomotor Task Performance of Male Baseball Players by Mary Jo Donovan, M.S.	98
Coherence: Discourse Cohesion as Measured in Two Sets of Student Essays by Rachel Fischer, M.A.	98
Censored Stories and Junk Food News: A Critical Examination of the Shrinking Marketplace of Ideas by John Hamerlinck, M.S.	99

A Comparison of Three Methods of Monitoring and Maintaining Target Heart Rate Across Modes and Between Genders by Anne Carol Howes, M.S . . . . .	.99
A Comparative Analysis of the Two-Point Shot Versus the Three-Point Shot in College Basketball by Daniel J. Lenz, M.S . . . . .	.100
Concepts of 'Animal' Held by Seventh Grad Students in a Rural, Central Minnesota Community by Kirk M. Lingenfelter, M.S . . . . .	.100
Response of Diabetic Cardiac Patients to Phase Two Rehabilitation by Caryn A. Locke, M.S . . . . .	.101
An Analysis of Affirmative Action in the United States and South Africa by Sithembele Wiseman Msaseni, M.S . . . . .	.102
An Analysis of the Influences of Inquiry Teaching on High School Chemistry Students' Learning of Acids and Bases by Susan M. Midas, M.S . . . . .	.103
An Analysis of the Relationship Between Staff Size and Winning Percentage in NCAA Division II Football by Brian E. Miller, M.S . . . . .	.103
A Survey to Determine the Impact of Gender Equity on AA High School Athletic Programs in Minnesota by Bruce R. Miller, M.S . . . . .	.104
The Impact of Social Marketing on Breast Cancer Communication: A Thematic Analysis of Health Care Communication in the Media by Maribeth S. Overland, M.S . . . . .	.104
Outdoor Recreation as a Method of Learning for ESL Students by Regina A. Palis, M.A . . . . .	.105
The Effects of Alcohol-Induced Hangover on a 30-Minute Run at Lactate Threshold by Michael A. Reid, M.S . . . . .	.105
Physiological Responses to Submaximal Exercise on Mechanically Braked Cycle Ergometers by Steve A. Sanders, M.S . . . . .	.106

Analysis of the Importance of Crisis Communication in Professional Sports by Kelly Jo Sauer, M.S.	107
The Alcohol Consumption of First-Year Student Athletes at a Midwest Women’s Private Liberal Arts College by Laure L. Schingen, M.S.	107
Teaching Strategies for Identifying Misconceptions and Affecting Conceptual Change in Earth Science Phenomena by Thomas H. Smith, M.S.	108
AMAE and the Reticent Japanese Student in the ESL Classroom by Jay C. Stocker, M.A.	108
The Perception of Cohesion of Female Intercollegiate Student-Athletes by Janelle M. Tieken, M.S.	109
The Effectiveness of a Strength and Conditioning Program for a Collegiate Softball Team by Paula J. U’Ren, M.S.	110
Ruollah Khomeini and Saddam Hussein: Spiritual and Temporal Despotism in Regional Conflict (1980-1988) by Gary R. Valentini, M.A.	111
A Survey Concerning the Perceptions of Middle School Science Teachers of Minnesota in Regard to the NRC’s National Science Education Standard of Inquiry by Thomas R. Wesner, M.S.	112

COLLEGE OF EDUCATION

CHILD AND FAMILY STUDIES

ADOLESCENT PREGNANCY: LOCUS OF CONTROL AND GENDER ORIENTATION AS INFLUENCES

Linda Lee Anderson

PROBLEM: The purpose of this study was to compare feminine role orientation and locus of control of female pregnant adolescents with non-pregnant female adolescents. A total of 26 pregnant adolescent females enrolled in the Teen Pregnancy Program in an alternative high school, and 30 non-pregnant female high school students enrolled in a regular high school completed the Bem Sex-Role Inventory, the Rotter Internal-External Locus of Control Scale and a demographic survey which included age, educational goal, current living arrangement, family income and race.

FINDINGS: The data were then processed using t tests. Results of the t tests indicated no significant differences between the two groups and variables. The correlation between the measures was not significant. The two groups were matched for age but were different in family living arrangements, educational goals, family income, and race.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Glen Palm, Chairperson

CORE ISSUES EXPERIENCED BY PARENTS WHO FORM FAMILIES THROUGH ADOPTION

Judy M. Arnesen

The purpose of this study was to determine if there are core issues experienced by parents who form families through adoption and the feelings or emotions that occur for parents who form families through adoption. A questionnaire was developed by the researcher that was based on Silverstein and Kaplan's (1989) Seven Core Issues of adoption. The questionnaire was sent to a convenient sample of 24 families; two questionnaires per household. The families from various communities throughout Minnesota, Wisconsin, Iowa, Michigan, and Canada attended Kamp Kimchee, a Korean culture camp at Nisswa, Minnesota.

Results of the study indicated that parents who form families through adoption experienced three or more of the seven core issues. Furthermore, in this study, the most frequently cited feelings or emotions surrounding the core issues were: loss, rejection, intimacy difficulties, and control.

The small sample size limits the generalizations of the results of this study, however, it offers opportunities for further research.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Joan Blaska, Chairperson

CULTURAL SENSITIVITY LEVELS OF EARLY CHILDHOOD SPECIAL EDUCATION PROFESSIONALS

Lori J. Derus

The purpose of this study was to assess the cultural sensitivity levels of early childhood special education professionals at Sherburne and Northern Wright Special Education Cooperative. A secondary purpose was to identify cultural competencies considered critical by the professionals for developing positive relationships with families from diverse cultural backgrounds. The study utilized a survey which consists of three parts. The first part was a demographic checklist which gathered general demographic information. The second part was a modified version of the Cultural Diversity Awareness Inventory developed by Henry (Larke, 1990), a self-administered questionnaire which addresses general cultural awareness, the culturally diverse family, cross cultural communication, assessments, and multicultural methods and materials. The final portion was the Professional Survey (Part C, Multicultural Competencies) developed by Christensen (1992) to examine the awareness of specific multicultural competencies by the professionals. The survey was distributed to 46 early childhood special education professionals throughout Sherburne and Northern Wright Special Education Cooperative. Thirty-five (75%) were returned.

The results from the Cultural Diversity Awareness Inventory indicated that a majority of the early childhood special education professionals were sensitive in each of the five areas addressed in the survey. However, a fairly high percentage of neutral responses were recorded on some statements, which made interpretation difficult on these items.

Results of the Professional Survey (Part C, Multicultural Competencies) indicated that the professionals view all the competencies listed as important for developing positive relationships with families from diverse cultural backgrounds. Though, competencies considered to be of utmost importance in the professional literature were not ranked as most important by the professionals.

Developing and implementing early childhood special education services that are comprehensive, family focused, and effective require well trained professionals from a variety of disciplines. Most of the professionals surveyed reported few courses or inservices training with a multicultural emphasis. Preservice and inservice training would be beneficial to increase early childhood professionals' knowledge and understanding of multicultural issues, especially the importance of exploring one's own cultural biases and learning about the cultures of the children/families they serve.

APPROVED BY RESEARCH COMMITTEE, APRIL 1997

Joan Blaska, Chairperson

THE RELATIONSHIP BETWEEN KINDERGARTNERS' TEMPERAMENT AND BEHAVIORS SEEN AT SCHOOL AND HOME WHILE ADJUSTING TO KINDERGARTEN

Shannon Eileen Dufresne

The purpose of this study was to explore the relationship between teacher-rated temperament traits of kindergarten students and adjustment to kindergarten, and to explore the relationship between parent reports of transitional behaviors kindergartners exhibit at home and teacher-rated school adjustment. The study had 38 children and parents from 10 kindergarten classrooms within one school district participate. Each teacher rated their student's temperament score and a behavioral rating scale measuring interpersonal skills and word-related skills while adjusting to kindergarten. Each parent rated their kindergartner on a transitional behavior checklist. The data indicated there was a correlation between temperamental traits and adjustment behaviors seen by both teachers and parents. High persistence, low activity, and low distractibility were related to high adjustment. An item analysis comparing the transitional behaviors seen by parents showed some significant relationship to work-related skills and

interpersonal skills. Children whose parents reported they wanted to know in advance what was going to happen, to go to the school playground, and to have time alone were positively related to work-related skills. And, children who complained they were not able to rest at school were negatively related to interpersonal skills.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1996

Glen Palm, Chairperson

AN EARLY CHILDHOOD SCREENING PROJECT

Christine D. Eckhoff and Nancy E. Holt

The purpose of this study was to establish new cut-off scores for the Minneapolis Preschool Screening Instrument (MPSI) in a selected school district. This study also compared mean scores in each age category for the original MPSI sample and the focus school district.

Subjects for the study were 385 children who attended an Early Childhood Screening. The screening took place in a rural community in Minnesota during the 1995-96 school year. The children in the study ranged in age from 3 years, 7 months to 5 years, 6 months.

The result of the study indicated that the mean scores for two age groups in the focus school district were higher than the corresponding age groups from the MPSI norm sample. As a result, the cut-off scores were also higher. The mean scores for the remaining age groups in the focus district were lower than the corresponding age groups of the MPSI sample. Cut-off scores could not be established due to a small sample size.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Joan Blaska, Chairperson

EFFECTS OF A GENDER-EQUITABLE CURRICULUM ON PRESCHOOLERS' ATTITUDES AND BEHAVIOR

Shelley Frerichs

This qualitative multicase study examined the effects of an early childhood curriculum designed to promote gender equity upon the preschoolers who were exposed to it. The curriculum was implemented primarily within the context of the children's play and involved staff behavior, classroom practice, and incidental teaching opportunities.

The study consisted of a field experiment conducted over the course of a Head Start program year. Thirty-four children enrolled in the two Head Start classes participated in the study, and of these participants, a boy and girl from each class served as individual case study subjects. Qualitative data related to the children's attitudes, behaviors, and interaction patterns was gathered through on-going, in-depth observations and informal interviews. The focus of this data collection process was upon information related to the children's knowledge, opinions, behaviors, and feelings associated with gender issues. The data were analyzed through the construction of individual case study narratives, which were subsequently interpreted through the performance of cross-case pattern analysis.

Individual differences appeared to dominate all the data collected. The children entered in to the study with very different backgrounds, characteristics, propensities, attitudes, and behaviors, which were reflected in their classroom performances, as well as in their reactions to the curriculum and their eventual outcomes. These outcomes showed that the majority of the children's behaviors and attitudes changed to some degree, which was reflected in an expansion of their typical preferred activities and greater flexibility in their perception of gender roles. Further analysis appeared to indicate that the effectiveness of the curriculum was predominately dependent upon the behavior of the staff persons who implemented it and that the character and degree of the children's reactions to the curriculum appeared to be associated with their responsiveness to the staff persons.

This study seems to provide support for the theory purporting that children's gender-related beliefs are products of the interaction of a variety of individual and environmental factors. Because of the complexity of this interaction and the numerous factors involved, extrication of those factors related specifically to the children's

exposure to the curriculum and their effects was not possible. However, implementation of the curriculum did appear to fulfill the intentions of gender-equitable education and was felt to have promoted fairness in the classroom and increased awareness and tolerance of both the staff persons and the children involved in the study.

APPROVED BY RESEARCH COMMITTEE JANUARY 1997

Jack Mayala, Chairperson

PARENTING THE EARLY ADOLESCENT: UNDERSTANDING PARENT NEEDS AND SUPPORT STRATEGIES

Mary Lee Garbe

A review of literature shows that because of changes in society in the past 25 years, parenting early adolescents has become a difficult process. Parents with teens cannot parent the way they were parented because lifestyles, morals, and attitudes are so different. Because of both parents working or single-parent households, often early adolescents are unsupervised and face adult situations.

A survey was conducted with 222 parents with children ages 10- to 15-years-old attending different types of schools. The general conclusions of the survey were: (a) parents agreed that it is difficult to raise children in a world that has changed in values and priorities, and (b) parents agreed that children need parental involvement throughout the school years to avoid problems such as drug and alcohol use and early sexual activity. Parents agreed that parenting education about the early adolescent would promote positive family experiences for parents and children and provide needed support amongst parents of adolescents.

A Parenting Forum, or parents discussing issues dealing with their young teen, was tested in three settings. A one-, two-, and three-session forum was field tested to determine which program was most beneficial to parents. The inference drawn from the evaluations of participant and facilitator was the three-session forum was most effective in learning about adolescence and in developing the support between parents. One and two sessions are enough to make parents aware of the value of networking with other parents of adolescents. All parents indicated a need and desire for periodic forums throughout the school year.

Future research is needed to identify effective recruiting procedures, types of formats for forums, and kinds of population most open to parent education as a support system.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1996

Glen Palm, Chairperson

CHILDREN'S PERCEPTUAL FLEXIBILITY TOWARD DIVERSITY: ECOLOGICAL APPROACH, CROSS-CULTURAL STUDY

Fukiko Hirose

This ecological study aimed to investigate children's flexibility and acceptance in their perception concerning racial and cultural diversity, persons with a disability, and sex roles in three different contexts : a public Japanese suburban school, a private school in an American suburban city, and a public American rural school.

One hundred twenty elementary school children in 5th and 6th grade in three schools and in two countries (20 boys and 20 girls in each school, mean age, 11.35) participated in this study.

A Perception Toward Diversity Scale (PTDS) consisting of 32 items with a 5-point-Likert-type scale was created as the instrument used in the study to measure flexibility and acceptance of diversity among children, by compiling and modifying questions from three standardized instruments: Quick Discrimination Index developed by J.G. Pinterpitto, A. Burkard, and B.P. Rieger (1995), Attitude Toward Diversity Scale developed by M.S. Montei, G.A. Adams, and L.M. Eggers (1995), and Attitude Toward Foreign Language developed by H. Briem (1974).

The demographic data about the sample were also collected by the brief information about the schools from the principals or the teachers in three schools and by participants' questionnaire responses about their friends of a different race and/or who have disabilities

Significant school differences and gender differences in children's perception toward diversity were found. Children in the private school in the American small city were significantly more flexible and accepting in their perception concerning diversity than small children in both the public Japanese suburban school and the public American rural school. Girls were significantly more flexible and accepting in their perception about diversity than boys. In addition, children who have friends of a different race or who have friends with a disability were significantly more flexible and accepting concerning diversity than children who do not have. When the data from the American small city school and the American rural school were collapsed into one set, there was no significant difference between American children and Japanese children in their perception about diversity.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Pamela Mattick, Chairperson

THE COMPARISON OF LOW CONCEPT SCORES ON THE DIAL-R TO LEARNING DIFFICULTIES IN THE ELEMENTARY YEARS

Beth M. Hoeg

PURPOSE:

The purpose of this thesis was to determine whether the percentage of children with low concept scores on the DIAL-R screening tool has increased over the past ten years. It also looked at the comparison between children scoring low in concepts on the DIAL-R at the time of early childhood screening (ages three through five), and later learning difficulties in elementary school as defined in this study as qualifying for Title I or Special Education services.

PROCEDURE:

Analysis of early childhood screening records was conducted using data collected ISD #2758 in Redwood Falls, a rural community in southwest Minnesota. There are currently 1,143 students enrolled in the district who could have participated in early childhood screening between 1987 and 1996. Of this number, 580 were actually screened in Redwood Falls and used in this study.

CONCLUSIONS:

The results of this study do not indicate an overall trend of increasing numbers of students with low concept scores on the DIAL-R screening tool. An increase occurred from 1990 to 1994, followed by slight declines. From 580 student records, 17 students were identified with a low concept score. Fifteen of these currently receive assistance from Title I or Special Education. Another 64 students were identified by referral to Title I or Special Education services in elementary school, but had a concept score on the DIAL-R in the middle range.

APPROVED BY RESEARCH COMMITTEE: NOVEMBER 1997

Dr. Joan Blaska, Chairperson

THE RELATIONSHIP OF PARENT-RATED AND TEACHER-RATED TEMPERAMENT OF KINDERGARTNERS AND BEHAVIOR OBSERVED AT HOME DURING THE ADJUSTMENT TO KINDERGARTEN

Nancy Lorraine Wallace Jacob

The purpose of this study was to explore the relationship between parent-related and teacher related temperament traits of kindergartners and to explore the relationship between parent-rated temperament traits and transitional behaviors kindergartners exhibit at home. This study utilized data from 38 children and parents from 10 kindergarten classrooms in one district. Parents rated their kindergartners' temperament and transitional behaviors observed at home. Each teacher rated their students' temperament. Data indicated that there were no significant relationships between parent and teacher temperament ratings and there were some significant relationships between temperament traits and behaviors observed by parents. Adaptability and Approach were negatively related to transitional behaviors. Intensity and Distractibility were positively related to transitional behaviors. An item analysis showed that child behaviors such as falling asleep at home, being short tempered, being upset when the morning routine was altered, or needing a long time to make a decision were clustered around Adaptability, Intensity, and Distractibility.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1996

Glen Palm, Chairperson

THE INCIDENCE OF SENSORY PROCESSING DISORDERS IN A ZERO TO THREE YEAR OLD SPECIAL EDUCATION POPULATION

Janelle Parsons-Kaufenberg

The purpose of this study was to report the results of screening for sensory processing disorders. The screening tool administered was the Infant/Toddler Symptoms Checklist. The subjects included 30 children between the ages of 7 to 30 months, who were participants in a special education program. The results suggested that 57% of the population screened demonstrated scores indicating they were at risk for having sensory processing disorder.

APPROVED BY RESEARCH COMMITTEE, JUNE 1997

Joan Blaska, Chairperson

A CASE STUDY OF RESOURCES FOR PREGNANT AND PARENTING TEENS IN THE FOLEY, MINNESOTA AREA

Janet M. Keaveny

Providing the best possible programs to promote the health, education, and well being of young parents in order to ensure positive pregnancy outcomes and parenting behaviors is one goal of the Foley Area Young Parent Collaborative, made up of service providers from Foley Public Schools and Benton County Social Service and Public Health.

Interviews were conducted to define the present system and how service providers perceive it is functioning to support pregnant or parenting teens in the school district of Foley, MN. The study examined current collaborative efforts as well as barriers in place that make collaboration difficult.

It was found that comprehensive services are available and the basic needs of the young parent population can be met. Service delivery access and teen parent participation is a problem in the Foley area.

Expanding the membership of the Foley Area Young Parent Collaborative to include pregnant and parenting teens and community members is recommended. Funding a position of service coordinator to know community resources and work with each pregnant and parenting teen would foster collaboration and access to services. A common intake form to be used for interagency referral is also recommended. It is suggested that WIC clinic hours be adjusted to accommodate school schedules, that the education opportunities be examined for the proper individual fit, that the Early Childhood Family Education program actively outreach the young parent population and provide support and parenting information, and that services be provided at a central location whenever possible.

APPROVED BY RESEARCH COMMITTEE: FEBRUARY 1998
Glen Palm, Chairperson

PERSPECTIVES OF INDIAN (SOUTH ASIAN) FATHERS' INVOLVEMENT/ ATTACHMENT WITH THEIR CHILDREN

Srivedhini Mohan

The purpose of this study was to explore the degree of involvement and attachment of South Asian Indian fathers' with their children. The participants were a convenience sample of sixteen fathers from a day care center in Bangalore, a city in southern India. The fathers in this study had children between the ages of 0-8. The interviews conducted on an individual basis, mainly focused on fathers' perspective of nature and meaning of attachment, and the fathers' reported levels of involvement with their children.

The results of the interviews indicated that fathers reported they were equally or more involved than mothers. The attachment data revealed considerable stress in attachment to their children, with 11 of the fathers scores being in the middle range but over the American father group norm. The measure of the fathers' reports of involvement and rate of attachment revealed no significant correlations.

Fathers in this study seemed to be changing their extent of involvement at a slow pace shifting from a passive "provider only" role to an active more directly involved father toward their children. Socialization of boys and men in general seemed to have influenced fathers to be comfortable with active involvement. In comparison to the western society, fathers in India are just beginning to realize the joy and emotional benefits of being an involved parent for both self and the child.

APPROVED BY RESEARCH COMMITTEE, MAY 1996
Glen Palm, Chairperson

A COMPARISON OF TWO Q-SORT ATTACHMENT MEASURES IN A GROUP OF FAMILY LITERACY PARENTS AND THEIR YOUNG CHILDREN

Jenelle S. Peters

The purpose of this study was to test the efficiency of the Attachment Q-Sort (AQS) and the Maternal Behavior Q-Sort (MBQS) in determining the attachment security of the children and the level of maternal sensitivity in mothers in a sample of 10 mothers and their young children in a Family Literacy program.

The scores of the AQS and the MBQS were obtained through three Family Literacy program staffs' observations and consensus sorts. These scores were used to determine if there was a correlation between the children's attachment security scores and the maternal sensitivity scores. The scores were also compared with the scores of a prototypically secure child and prototypically sensitive mother in an attempt to determine the difference in security and sensitivity scores of this sample group and what are considered to be optimal scores.

Results indicated that for this sample, there was a high positive correlation between the scores of the AQS

and the scores of the MBQS. Results further concluded that there was a statistically significant difference in this sample's AQS scores and MBQS scores that the optimal score of the prototypically secure child and sensitive mother.

APPROVED BY RESEARCH COMMITTEE: MAY 1998
Glen Palm, Chairperson

PARENTS' BELIEFS ABOUT THEIR DEVELOPING GIRLS AND BOYS

Antoinette M. Sveom

QUESTIONS:

There are many threads running through the fabric of an individual and not one simple explanation for the fascinating and complex process from which unique designs emerge in the form of girls and boys. The purpose of this study was to find out parents' ideas and beliefs about their developing girls and boys. What did they cite as the other major influences on the development of their children? Was there a time in the development of their child which brought heightened awareness or concern for the parents with regard to the child's gender? Did parents have a vision of their child which reflected stereotypic views or views which broke the structures of strict gender typing? Child rearing practices reflect parental beliefs. These beliefs may reflect the cultural ideology which seeks to maintain gender status quo or they may contain some elements of protest and challenge which can lead to cultural change.

FINDINGS:

There were four main beliefs gleaned from parent interviews. The stated belief that received the strongest support in this study was the view of parents that gender was less influential on the child's development than were individual traits. Parents also believed that children learn through observation and imitation. Parents indicated that their life experiences helped shape their beliefs about what children are like and influenced how their children would be raised. This belief was also reinforced when parents indicated that what children observe in the interactions of the spousal relationship was a strong influence on the development of their children. Female parents believed that gender roles are somewhat flexible for their girls and boys. Gender roles are expanding but still remain less flexible for males than for females. Parents believed there are and expressed concern about the cultural influences affecting the gender development of their children and the flexibility gender roles.

SUMMARY AND IMPLICATIONS:

Most parents believed they would emulate the parenting practices with which they were raised. If those past Child rearing practices and interactions within the spousal relationship reflected gender stereotypical division of labor, behavior expectations, treatment, messages, and status, then sexism will be further perpetuated. Important cultural changes can be and are initiated from within the family. One place to start the process of emancipation is at the beginning of life through the identification, examination, and conscious choice for change of the ideas about girls and boys that care givers possess.

This process can be started through parent education classes.

APPROVED BY RESEARCH COMMITTEE: NOVEMBER 1997
Glen Palm, Chairperson

GRANDPARENTS' REACTIONS TO HAVING A GRANDCHILD WITH DOWN SYNDROME

Diane Williams-Johnson

When parents are told that their child has a disability, typically the child's grandparents are the first people they tell. How then, do grandparents react after learning of the diagnosis? What feelings occur initially and as time goes on? Do grandmothers and grandfathers react in a similar manner? Do grandparents of a grandchild with a disability need support and, if so, where do they find this support? Grandparents of grandchildren with Down syndrome who were receiving early intervention services from a large metropolitan school district were invited to participate in this study. They reported experiencing feelings of grief at the time of the initial diagnosis. In addition, they vividly remembered when and where they were and who told them of the diagnosis. Grandparents spoke of the acceptance of their grandchild with Down syndrome and the joy this child brings to them. Grandmothers and grandfathers reported similar feelings about being a grandparent of a grandchild with Down syndrome. Grandparents implemented informal support systems and spiritual strength as strategies used in dealing with being the grandparent of a grandchild with Down syndrome.

The implications of this study include: grandparents need accurate and current information regarding their grandchildren's disabilities. Opportunities within the educational setting need to be offered to grandparents to empower them and increase their understanding and acceptance of their grandchildren's disabilities. Early interventionists and other professionals working with families need to be continually aware that families are interactive units. Families need caring and concerned professionals who have an understanding of the grieving process and its effect in grandparenting a child with a disability.

APPROVED BY RESEARCH COMMITTEE, OCTOBER 1996

Joan Blaska, Chairperson

EDUCATIONAL ADMINISTRATION

ASSISTING AN IDENTIFICATION MODEL FOR THE GIFTED/TALENTED STUDENTS IN A SMALL, RURAL SCHOOL DISTRICT IN CENTRAL MINNESOTA

Wendie M. Anderson

The purpose of this study was to show a comparison between the students who were recommended and qualified for the gifted program and those who were recommended and did not qualify for the gifted program in a small, rural school district in central Minnesota.

Data for this study were collected from students' permanent cumulative record cards. The population included students recommended for the gifted program during the years 1984-1988.

An independent sample t-test was used to compare the means of the two groups' grade point average and extra-curricular activities/honors. A Mann-Whitney u-test was used to compare the class ranks of the two groups.

The study revealed some significant differences existed between the mean of grade point averages and the mean of class rank for the years 1986-1987 and 1987-1988. There were no significant differences between the mean of grade point averages, activities/honors, and class rank for the years 1984-1985, 1985-1986, or the activities/honors during the years 1986-1987 and 1987-1988.

An unanticipated outcome of the study showed that each year the qualified students' grade point averages increased from a mean of 3.74 to a mean of 4.19 while the grade point averages of the non-qualified students remained fairly constant.

The data illustrated that with the current identification process there is not much difference between the two groups of students. There is no data to support the fact that the identification process for the gifted program was a factor in higher grade point averages, class rank, or number of activities/honors.

Recommendations for the school district would be to continue to implement current models of identification of the gifted; in-service for teachers, parents, and community members on current research concerning different teaching/learning styles for the benefit of all children, including the gifted.

APPROVED BY RESEARCH COMMITTEE: FEBRUARY 1998

Elaine L. Leach, Chairperson

SECURITY METHODS OF MINNESOTA SECONDARY SCHOOLS

Mary Pat Cumming

PURPOSE: The purpose of this study was to provide a picture of the security methods used in Minnesota's secondary schools. Three research questions were addressed.

1. What security methods are used?
 - a. Devices
 - b. Security personnel
2. Are there differences in the methods used by Metro and Greater Minnesota schools?
3. What are the types of security problems in Minnesota secondary schools?

PROCEDURE: This study was supervised by the Department of Educational Administration and Leadership at St. Cloud State University in partial fulfillment of the degree of Master of Science in Educational Administration. The study was limited to secondary schools located in Minnesota. Research was done to determine the security methods schools currently use or are planning to add in secondary schools across the state. School location and types of security problems within a school were examined.

CONCLUSIONS: Survey results indicated that security problems exist in Minnesota's secondary schools. Problems include intruders entering school buildings, fighting, theft, vandalism and graffiti. School location was not a large factor in the types of security problems encountered.

State-wide, schools use a number of security methods including security cameras, locking doors, monitoring hallways, and employing police officers in their schools. Metro schools indicated they used a greater number of security devices to combat security problems than did Greater Minnesota schools. Metro schools also indicated a higher percentage of schools planning to add extra security methods in the future. Greater Minnesota schools are planning to add security measures, but at much lower rate.

Future research in the area of school security would provide interesting results. Repeating this survey in five years would allow researchers to determine if security problems in Minnesota's secondary schools have increased and if schools added their proposed security methods indicated in this study.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1996

Charles E. Moore, Chairperson

FACTORS AFFECTING SITE-BASED DECISION-MAKING IN ELEMENTARY SCHOOLS

Barbara Kearn

The purpose of this study was to examine the effect of various factors on site-based decision-making in Minnesota's elementary schools. The opinions of principals in rural, suburban, and urban public school settings, as well as site observations by the researcher and a review of pertinent documents were obtained.

The review of literature presented various forms site-based decision-making may take in public schools today. Expected outcomes and areas of decision-making were explored. A collection of nationwide surveys of elementary principals' perceptions of the effectiveness of site-based decision-making were reviewed to ascertain barriers to its successful implementation.

The sample included three elementary principals from rural, suburban, and urban Minnesota elementary schools that received a restructuring grant from the Minnesota Department of Education. The purpose of the grant was to examine practices and organizational structures for the improvement of student achievement of educational outcomes through school site-based decision-making.

The conclusions reached were:

1. The level of trust at all three sites either positively or negatively impacted the effectiveness of site-based decision-making.
2. The knowledge of group process skills at all three sites either positively or negatively impacted the effectiveness of site-based decision-making.
3. The results supported findings of previous research on the positive outcomes achieved in the areas of community involvement and student morale through site-based decision-making. Student achievement did not increase.

The following recommendations were made:

1. Administrators and school boards should assess the existing level of trust between the various stakeholders in their educational community before initiating site-based decision-making.
2. While implementing site-based decision-making, the decision-making matrix may need to be gradually phased in. Otherwise, issues directly related to student achievement may be put "on hold" until the council has developed the necessary group skills.
3. The council must decide how a high level of expertise will be maintained when council members resign and others are elected.
4. One parent on the site council does not contribute as much to the process as if there are a number of parents.
5. Administrators should consider additional ways to provide compensation for council members so they do not "burn out" and are able to maintain their membership over an extended period of time.
6. When structuring the by-laws, consider scheduling meetings often enough for members to build a working relationship, receive background information, discuss issues, and make informed decisions.
7. All council members should have an equal vote with either the principal or board having the ability to veto decisions that are not in alignment with state rules or mandates.

APPROVED BY RESEARCH COMMITTEE: MAY 1998

Elaine Leach, Chairperson

A SURVEY OF MIDDLE SCHOOL SERVICES FOR MINNESOTA'S GAY, LESBIAN, AND TRANSGENDER PUBLIC SCHOOL STUDENTS.

Rod Metzger

PURPOSE:

The purpose of this study was to discover what programs currently exist in Minnesota's middle/junior high schools for Gay, Lesbian, Bisexual, and Transgender youth. Specifically, what expectations are there for staff and what services are made available for this population?

PROCEDURE:

The study was designed as a descriptive analysis to determine the state of services for GLBT youth in Minnesota's middle/junior high schools. The study's purpose was to gather data that described the current state of affairs with regard to middle schools and how they treat GLBT youth. The middle/junior high schools were randomly selected from a master list of middle/junior high schools provided by the Minnesota Department of Children, Families, and Learning. In order to ascertain the status of these services throughout the whole state, both urban and rural schools were selected to be a part of the survey. Questionnaires were sent to the principals or chief administrators of each of these schools.

CONCLUSIONS:

The purpose of this study was to establish data on what programs and services currently exist for GLBT youth in Minnesota's public middle/junior high schools. The results indicate that middle/junior high schools in Minnesota are dealing, to some degree with the more "general" issues of harassment, discrimination, human sexuality, tolerance, and respect, yet when it comes down to the specific needs of GLBT youth, there is very little being done and not many changes are being planned. The survey results indicated that what most research points out as effective components of a model for combating homophobia, most administrators do not seem to be implementing these into their schools.

APPROVED BY THE RESEARCH COMMITTEE: AUGUST 1997

Charles Moore, Chairperson

COMPUTER UTILIZATION IN RURAL MINNESOTA ELEMENTARY SCHOOLS

Barbara J. Rubie

PURPOSE:

The primary purpose of this study was to provide an analysis of computer utilization in rural Minnesota elementary classrooms. The secondary purpose of this study was to provide current information of the status of technology in rural Minnesota school districts to administrators and technology committees. Research questions addressed were:

1. Do elementary schools in rural Minnesota utilize computers in elementary classrooms?
2. Are rural elementary classrooms provided connections to the Internet?
3. Are rural elementary schools reaching computer per student goals?
4. Do elementary teachers in rural schools receive support and training in utilizing computers in the classroom?
5. Do rural school districts support technology in their schools?

PROCEDURE:

The study was limited to rural Minnesota elementary schools I districts with student populations below 3,000 students. Two different surveys were mailed to 182 administrators and 1,375 teachers at selected schools.

Statistical analysis of survey data was done at St. Cloud State University. Research results are reported as percentages.

FINDINGS:

Survey results indicated that most schools surveyed had a computer lab, though teachers expressed concerns about access to labs. The average number of computers in the classroom was 2.28. The average number of multimedia computers was .97 per room.

Teachers reported that 65% of students use computers at least once a week. Students use computers 1.33 hours per week. Computers are used most during free time or when students are finished with work. Students use computers most often for drill and practice and recreation.

Survey results indicated that 91.2% of schools surveyed and 55.6% of classrooms were linked to the Internet. This percentage is higher than the national average.

The study was unable to determine if rural Minnesota elementary schools are reaching computer per student goals. The ratios of classroom computers was 1.1 per 10 students. The ratio of classroom multimedia computers was 1 per 21.3 students.

Both teachers and administrators reported high percentages of staff development occurring in their schools. Administrators reported a high level of support for technology in the districts.

Additional information found 69.1% of teachers considering themselves to have advanced or intermediate proficiency at using computers.

RECOMMENDATIONS:

1. A district technology plan must be developed.
2. Districts must provide staff development for optimum use of technology.
3. Districts should develop a comprehensive technology curriculum.
4. Each building should have a media specialist or technology coordinator.

APPROVED BY RESEARCH COMMITTEE: FEBRUARY 1998

Charles Moore, Chairperson

THE SECONDARY SCHOOL PRINCIPALSHIP HIRING PRACTICES AND PROCEDURES

Christy A. Werder

The purpose and focus of this study was to examine the processes used by school districts when hiring a secondary school principal. The population consisted of 156 public school superintendents from the 1992-93 school year serving schools outside the seven county Metropolitan area.

The results disclosed a hiring ratio of seven men to one woman. The research further showed that gender inequity was fairly consistent within the candidate selection and interview committees. When gender ratios within these committees was equal, female applicants were more successful in gaining interviews and the position.

Posting sites indicated on the survey were wide spread and equally accessible by candidates of either gender. The majority of searchers used a wide variety of posting site combinations with a 75% use of college placement services.

The superintendents and Boards of Education played significant roles in the screening and selection of secondary school principals. While other committees and individuals had input, opportunities for females increased when teachers were included in the candidate screening and interviewing process.

The researcher concluded that qualified female candidates must be encouraged to apply for secondary principalships. Candidates need to be encouraged and supported as they develop necessary skills and experiences required for success--both in the application and interview process as well as in the secondary principalship.

APPROVED BY RESEARCH COMMITTEE, JUNE 1996

Bruce H. Miles, Chairperson

THE RELATIONSHIP BETWEEN SELECTED FACTORS OF PARENTAL CONFIDENCE AND VOTING BEHAVIOR IN A 1994 REFERENDUM LEVY IN A MINNESOTA SUBURBAN SCHOOL DISTRICT

Deborah A. Williams

PROBLEM: In one suburban Minnesota Public School District two consecutive referendum levy attempts failed to pass. A case study was developed to determine parent satisfaction toward school district programs and services and the impact the degree of satisfaction had on passage of the 1994 referendum levy. A survey instrument was utilized to assess parent satisfaction.

PROCEDURE: The parents of enrolled students participating in this study were residents in a suburban Minnesota school district. A random sample was selected from the population of parents of school age children enrolled in the district in March of 1995. The instrument was a survey designed by the researcher. The selection of the statements was based on the literature review, specifically, the National Study of School Evaluation, the Phi Delta Kappan Commission on Public Confidence in Education Report and the dissertation by Lintz (1967) "Practices and/or techniques to improve school-community relations and develop confidence in the public schools."

An independent group t-test was used to determine if there was a significant difference in the confidence levels of parents that voted in favor of the referendum levy and those who voted against the referendum levy. Mean scores of the level of confidence were calculated. Higher scores on the confidence measures indicated a greater level of confidence, lower scores indicated less confidence.

FINDINGS: A relationship was found to exist between the presence of confidence in programs and services and the absence of trust in the communications. Two of the twelve subscale variables were found to be positively related to referendum levy passage and dealt with the topics of trust and openness. From the results of this study, it would appear that the existence of community trust in the school system is very important to referendum levy passage.

A relationship was found to exist between parents who have a high degree of confidence in the school, and their nonvoting behavior. This result suggests that, to increase voter turnout, the district may need to better communicate how failure to pass a referendum levy will impact programs and services.

APPROVED BY RESEARCH COMMITTEE, MAY 1996

Elaine Leach, Chairperson

PRESCHOOL SERVICES FOR CHILDREN WITH DISABILITIES: TOPICAL GUIDEBOOK

Naomi O. Younggren

This guidebook was developed to facilitate the establishment of dependable quality services among the Department of Defense Dependents Schools (DoDDS) Preschool Services for Children with Disabilities (PSCD) programs, located in Europe. Programs and services for preschool children age children with disabilities, in overseas military communities, are relatively new. Prior to August, 1993, preschool children (ages 3 through 5) with disabilities were

provided services on a permissive basis, leaving many children without needed services. Along with the services being new, many of the teachers were also new to the field. In 1993-1994, 49 of the 68 PSCD teachers were newly trained, having no prior experiences with preschool age children. The intent of this guidebook is to enhance and improve services, for preschool children with disabilities and their families, by providing relevant information in areas critical to successful programs and services. The topical areas addressed in this guidebook include, Child Find, assessment, inclusion, home visiting, and transition from early intervention to preschool. Although this guidebook was written for teachers and program developers, it is anticipated the included can be beneficial for parents, para-professionals, administrators, supervisors, and medically related support personnel. The information included in each section is based on review of current best practice in early childhood special education augmented with numerous sample materials.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1996
Eva Gadberry, Chairperson

ELEMENTARY EDUCATION

WRITING ACROSS THE CURRICULUM: SUCCESS FOR MIDDLE SCHOOL AND HIGH SCHOOL STUDENTS

Kathy Hammill

The purpose of this study was to explore the concept of Writing Across the Curriculum for students in middle school and high school. It focused on the role of writing and how it could enhance learning in all parts of the curriculum.

The Monticello School District tested students during the spring of 1994 using the Minnesota Writing Assessment Test. Students in grades 6, 9, and 11 took the test to measure the success of the current writing curriculum in Monticello. The test results indicated that written communication in the Monticello School District needed improvement. The district conducted an audit of the current writing curriculum and evaluated and analyzed all students' writing grades 1 through 12. As a result of the compositions, a scope and sequence of writing curriculum was designed and staff development workshops on Writing Across the Curriculum were conducted.

In the spring of 1996, the students in grades 6, 9, and 11 once again tested using the Minnesota Writing Assessment Test. The results of the test showed that the district reached 70% of the overall goal to improve writing. The results clearly showed that all grades tested had some improvement in writing on the test. This was an indication that the new writing curriculum had some success in creating a higher standard of writing for the students of Monticello.

APPROVED BY RESEARCH COMMITTEE: AUGUST 1997
Michael Davis, Chairperson

CONTEXTS OF STUDENT LEADERSHIP IN AN ELEMENTARY MULTI AGE CLASSROOM

Penelope D. Jones

PROBLEM:

This study focused on identifying the contexts within an elementary MULTI AGE classroom that promote student leadership. A definition of leadership descriptive of elementary-age students was developed from the works cited in the literature review.

PROCEDURE:

The data for this study were collected in a MULTI AGE classroom over 2 consecutive years. Students were observed by the teacher-researcher in the context of typical classroom activities and interactions. Observations included classroom and playground displays of leadership and were recorded either in anecdotal form or tallied as general helping behavior. In addition, audio tapes and student response sheets from cooperative group activities provided examples of student leadership behavior.

Examples of leadership were first identified by the presence of the identified personal qualities and learned skills, then examined to determine the situation that fostered the leadership behavior.

FINDINGS:

Analysis of the data confirmed the existence of student leadership within the classroom and yielded these seven contextual themes:

Children tend to display leadership behaviors:

- when performing classroom jobs
- during recess
- when new students join the class
- when conflict arises
- in the context of instructional need
- when organizing for learning
- when working in cooperative groups

Included in Chapter 5 are descriptions of a representative sampling of leadership behavior for the seven contextual themes.

CONCLUSIONS:

It is recommended that teachers seriously consider their responsibility for providing students with opportunities to develop leadership skills. This study indicates that all students are potential leaders, however, the context must correspond with their skills. A MULTI AGE classroom coupled with a holistic philosophy provides an environment that supports the identified contexts and encourages student attempts at leadership.

APPROVED BY RESEARCH COMMITTEE: OCTOBER, 1997

Patricia Heine, Chairperson

A STUDY OF THE USE OF THE INTERNET IN AN ELEMENTARY SCIENCE PROGRAM

Teresa Ksiazek Lueck

PURPOSE:

The purpose of this study was to identify and evaluate Internet science sites to use in relation with an elementary science curriculum.

PROCEDURE:

A sample of 50 Internet earth science sites were selected to be visited and evaluated for the study. The evaluation form contained six parts: Applicable to science objectives, quality of scientific content, elementary ease of use, aesthetically pleasing, gender awareness, and multicultural awareness. A five point numerical survey was developed based on the relevance of each criterion and used to evaluate each Internet site. A score of one was determined to be irrelevant, two represented little relevance, three represented some relevance, four represented much relevance, and five was determined to have been highly relevant. The study took place over a one month period.

FINDINGS AND CONCLUSIONS:

From the data collected, it was concluded that there were several Internet science sites that met each criterion and the Internet could be used in conjunction with the current earth science curriculum within the elementary classroom. Sites that were considered to have contained some, much, and high amount of relevance will be considered for use within the elementary classroom. Recommendations were given focusing on the importance of the development of criteria and a rating system prior to conducting an investigation, the addition of gender stereotyping to the list of criteria, and the planning of additional activities when working with the Internet as potential troubleshooting may arise.

APPROVED BY RESEARCH COMMITTEE: MAY, 1998
Boyd Purdom, Chairperson

PERCEPTIONS AND ATTITUDES OF INCLUSIVE TEACHER EDUCATION PROGRAM STUDENTS

Lynn Paige Pehrson Millar

PROBLEM: The implementation of the Individuals with Disabilities Education Act (IDEA) and the regular education initiative (REI) is becoming reality in a growing number of school districts across the United States. Educators, therefore, must be properly prepared to meet the needs of all students in the regular classroom, regardless of disability or exception. The perceptions and attitudes of teachers toward inclusion and students with disabilities affects the effectiveness of inclusive education programs. It is therefore necessary for preservice teacher education students to have positive perceptions and attitudes toward inclusion and students with disabilities. Teacher preparation programs must address this issue. This study examines the perceptions and attitudes of students within the Inclusive Teacher Education Program (ITEP) at St. Cloud State University in St. Cloud, Minnesota.

PROCEDURE: Students enrolled in Cohort 1 of the ITEP program were surveyed and interviewed as they entered the program in the fall of 1994 and exited the program in the spring of 1996 to determine their attitudes and perceptions toward inclusion and students with disabilities, as well as toward the ITEP program in general. The following related questions became the focus of this research project:

1. Do the ITEP students have increased positive attitudes and perceptions toward inclusion as a result of being in the ITEP program?
2. Do the ITEP students have an understanding of the roles and competencies required of inclusive teachers as a result of being in the ITEP program?
3. Do the ITEP students feel prepared to teach children with disabilities in a regular classroom setting?
4. What components of the ITEP program were most helpful and the least helpful to the ITEP students?

FINDINGS: Based on the survey and interview results, the ITEP students' attitudes and perceptions toward inclusion and students with disabilities were more in agreement with the concept of inclusion as they exited the two-year ITEP program. The students also developed an understanding of the roles and competencies required of inclusive teachers during this time. Most of the students felt prepared to teach in an inclusive classroom upon exiting the ITEP program in the spring of 1996. The most helpful components of the ITEP program were the number and variety of field experiences, the team-teaching structure, and the cohort structure.

CONCLUSIONS: Implications from this study for teacher preparation programs were to address the issue of developing positive perceptions and attitudes in the preservice teacher education students toward inclusion and students with disabilities, and that they teach the skills and competencies needed to be effective inclusive teacher.

The Special Education and Teacher Development departments should team-teach whenever possible to give students an education that prepares them for an inclusive classroom. The use of cohort structure and collaboration between departments is also recommended for effective inclusive teacher education programs.

APPROVED BY RESEARCH COMMITTEE, JULY 1996

Nancy Bacharach, Chairperson

MASTERY LEARNING: A STUDY OF REVIEW INTERVALS

Stephen J. Petroski

Educators often find that students have forgotten skills and concepts that they have mastered only weeks and months previously. Most educators will agree that review is a significant instructional tool because it increases both learning and retention. The ideal time sequence of when to review after student mastery of skills/concepts is not overtly apparent. As educators in Minnesota and other states try to prepare students to meet requirements to pass basic standard tests, an ideal time sequence of instructional review could prove to be an invaluable component.

The purpose of this study was to vary the amount of time between review of particular mathematical outcomes to determine if there is an ideal time sequence that may provide for skill maintenance and/or improvement of skills/concepts.

Five heterogeneous homeroom groups were included in the study. All five groups received similar instruction and practiced desired skills/concept. Students were then tested to determine initial mastery of the skills/concepts. Each group then received review instruction on predetermined dates which corresponded to their review time interval, with review sessions occurring every week, every other week, every third week, every fourth week, or no review at all. Review instruction consisted of an established plan so that all groups would receive similar instruction. Twelve weeks after the post instruction mastery test, students were retested to determine an ideal review time sequence.

The results of this study indicate that review instruction, in 1-or 2-week intervals, provides for higher skill maintenance and /or improvement of skills/concepts than less or no review instruction. The study also displayed data that reflected a non significant difference between 1-or 2-week intervals of instructional review of skills/concepts.

APPROVED BY RESEARCH COMMITTEE: AUGUST 1997

Russell Schmidt, Chairperson

TEACHER KNOWLEDGE, ATTITUDES, AND PERCEPTIONS OF THE RESULTS-ORIENTED GRADUATION RULE

Joseph E. Telfair

PROBLEM:

In 1989 the State Board of Education and the Minnesota Department of Children, Families, and Learning began the process of redefining what students should know, understand, and be able to do before they graduate from high school in Minnesota. The product of this reform process was the development of the new Minnesota Graduation Rule/Standards.

The question this study set out to answer concerning the implementation of the new Graduation Rule/Standards were: Do the classroom teachers and specialists of the St. Cloud School District 742 possess a sense of ownership in the proposed new ruling and the knowledge necessary to aid in the successful implementation of this new curriculum design?

PROCEDURE:

The method of study was through the use of an author-constructed questionnaire consisting of 15 statements/questions that queried teacher opinions concerning the Graduation Standards and its future implementation.

FINDING:

That the St. Cloud teaching staff does possess the prerequisite knowledge of the State Board of Education's intent and rationale for proposing this change in curriculum design that could aid in its successful implementation. Also, the prerequisite knowledge is supported by an historical understanding of how the reform proposal began and agreement with some of the proposal's fundamental assumptions on student learning and the role of schools in the learning process. However, what is missing is a sense of ownership on the part of teachers who are now expected to implement this new curriculum rule. The St. Cloud teaching staff view the Graduation Rule/Standards as mandated change.

APPROVED BY RESEARCH COMMITTEE: FEBRUARY 1998

Boyd Purdom, Chairperson

COMMUNICATION AND COLLABORATION IN A MIXED AGE CLASSROOM

Kimberly S. Valentine

This paper describes a 1-year qualitative study investigating students' attitudes concerning a MULTI AGE setting in a traditional school setting. This paper also examines the relationships between fourth and fifth grade students within the MULTI AGE setting. Students in the MULTI AGE setting interacted together each afternoon during the Communication block (reading, writing, and inquiry).

The author surveyed the students using both a Likert Scale and an open-ended format. In addition to collecting this data, the author also videotaped students' interactions and audio taped students' discussions in a focus group format. The purpose of this investigation was to study student interactions and attitudes in a MULTI AGE setting. The author then intended to use these findings in further building the MULTI AGE program.

Students expressed their attitudes concerning the MULTI AGE setting. The author found a variety of attitudes ranging from feelings of satisfaction to dissatisfaction with the MULTI AGE configuration. Many students viewed the continuing to a 2 year learning cycle as beneficial and saw themselves in leadership positions. The author observed that younger students seemed to be more satisfied with the MULTI AGE classroom. Fifth grade students expressed some concerns of being left out of traditional fifth grade activities and preferred to interact with same age peers. The author felt that students' attitudes may have been more positive had the MULTI AGE classroom been in a school where other MULTI AGE settings occurred in lower grades.

APPROVED BE RESEARCH COMMITTEE: JULY 1997

Patricia Heine, Chairperson

INFORMATION MEDIA

ATTAINING JOB SATISFACTION IN THE WORKPLACE SETTING

Katherine A. Koepke

PROBLEM: The purpose of this study is to determine the importance of job satisfaction in the workplace setting and identify strategies that employers can use to enhance job satisfaction for their employees.

PROCEDURE: First, a study of the literature was conducted on job satisfaction, self-esteem and workplace issues. A questionnaire was then given to a group of nursing assistants at the Guardian Angels Care Center in Elk River, Minnesota.

FINDINGS: It became evident that self-esteem needs are very important to people, especially in the workplace setting. Also decreasing dissatisfiers and increasing satisfiers is very important to employees in attaining job satisfaction. If employers follow strategies to make their employees feel important and valued, then they see more productive employees, less turnover and a better corporate culture. There is a definite need for further research in this area to help employers see that by maintaining employee job satisfaction, there are less training costs due to less turnover, and more profits, due to motivated and more productive employees.

APPROVED BY RESEARCH COMMITTEE, JULY 1996
Dennis Fields, Chairperson

MIDDLE/JR. HIGH SCHOOL EDUCATION

SEX-ROLE STEREOTYPING AND FEMALE ADOLESCENTS

Kemberly Timlin

PURPOSE: The purpose of this study was to investigate whether sex-role stereotyping still exists and explore its implications on the self-esteem of today's adolescent girls. Adolescents were chosen as a study group because research identifies adolescence as the time of greatest impact for sex-role issues and little attention has been paid to girls of this age. I teach at a middle school and have made observations in the behavior of girls that raised concern.

TEST GROUP: A self-esteem survey was given to female students in grades 4, 7, and high school facilitated by classroom teachers. The survey consisted of 80 questions answered with a yes or no. Each question fell under a specific category relating to self-esteem such as appearance, popularity, and happiness. Student participants in the study were randomly chosen and names were not included on the surveys. All participants were given the exact same survey and the results between age groups were used to make a comparison of self-esteem levels between the three target groups.

FINDINGS: The review of the literature indicated sex-role stereotyping does exist and that the effects on development are critical. The levels of self-esteem indicated in test scores showed fourth graders to have the highest, high school to be in the mid range, and seventh grade to have the lowest which is congruent with what the literature tells us. Social implications are the connection to sex-role stereotyping. Links were established between looks and intelligence to happiness levels and anxiety levels to self-esteem levels.

CONCLUSIONS: Sex-role stereotyping still exists and affects female adolescents in a number of ways, including their self-esteem. Early adolescent students are struggling with the lowest level of self-esteem of all developmental stages. Social issues become paramount to adolescents. They define happiness and success in terms of appearance and popularity. There appears to be a correlation between levels of perceived popularity, appearance, and intelligence to the levels of happiness and anxiety. Every student, no matter what range her total score fell in, had categories in the below average range, indicating that even students with above average levels of self-esteem have areas of limitation.

Recommendations to schools included ensuring a gender-fair curriculum by monitoring textbooks; providing teacher training to help teachers eliminate unintentionally sexist practices; providing mixed gender activities; and implementing sexual harassment policies.

Families can help by making sure they send the same message to boys and girls; parents should have the same expectations for their sons and daughters; communication lines should be open to dialogue issues important to this stage of development; and parents also need to model behavior and attributes that they would like to see in their adolescents.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Terry K. Miller, Chairperson

PHYSICAL EDUCATION

FLEXIBILITY: THE EFFECTS OF A FLEXIBILITY PROGRAM ON EIGHTH GRADE STUDENTS

Daniel J. Brinkman

The purpose of this study was to determine if a flexibility program would improve physical fitness test scores of eighth grade students. In addition, a check was also done on age groups and gender.

A pretest-posttest control group design was used in the fall of 1995 and the spring of 1996. Graphs and statistical data indicate that the majority of students, on the average, improved their test scores with the flexibility program.

The use of mean scores and the graphing of age groups, gender, and total groups seem to indicate that the flexibility program increased the students' performance in most cases. The results were altered somewhat by the different motivational aspects of eighth grade students.

APPROVED BY RESEARCH COMMITTEE: AUGUST 1997

Robert Waxlax, Chairperson

THE ALCOHOL CONSUMPTION OF FIRST-YEAR STUDENT-ATHLETES AT A MIDWEST WOMEN'S PRIVATE LIBERAL ARTS COLLEGE

Laure L. Schingen

The purpose of this study was to research the alcoholic consumption behaviors of first-year college students, and more specifically student-athletes. The researcher addressed differences between first-year student-athletes and non-athlete students in respect to change in alcohol consumption behavior, actual consumption of alcohol, and factors influencing alcohol consumption behavior. A fourth hypothesis researched the influence of upper-class teammates and first-year teammates with regard to first-year student athletes alcohol consumption behavior.

A Chi-square, independent t-tests and a paired t-tests were used in this study to identify potential significant differences between student-athletes and non-athlete students, and upper-class and first-year teammates.

The results of this study revealed no significant differences between first-year student-athletes and non-athlete students regarding the change in alcohol consumption behavior, the amount of alcohol consumed, and the factors that influence consumption behavior. There was also no significant difference in the influence of upper-class and first-year teammates on student-athletes' alcohol consumption.

The alcohol consumption behavior of the first-year student, whether a student-athlete or non-athlete student is a concern on college campuses. This research revealed that first-year students are consuming alcohol, but being an athlete has no impact on alcohol consumption.

APPROVED BY RESEARCH COMMITTEE: MAY 1998

Ruth J. Nearing, Chairperson

ESTABLISHING NORMS FOR EIGHTH GRADE STUDENTS USING THE PRESIDENT'S CHALLENGE PHYSICAL FITNESS PROGRAM

John F. Utter

The purpose of this study was to develop norms for eighth grade students at Sandburg Middle School, Golden Valley, Minnesota. The five tests measured lower back/hamstring flexibility in addition to cardiorespiratory endurance, upper body, arm and abdominal muscle strength and endurance, leg muscle endurance, and power combined with speed and agility. The tests included the One- Mile Run/Walk, Shuttle run, Pull-Ups, Curl-ups, and V-sit reach. These tests were administered to 374 students during their physical education classes from 1990 to 1993, with not more than one test per day. With this many students being tested, a good ranking in each test was completed. The established norms were also compared to national norms established by the President's council on Physical Fitness and Sports in cooperation with AAHPERD. Sandburg Middle School students scored equal to or higher than the national norms in most areas. Students scored lower than the national norms in the following areas: the top 5% ranking for each test; the 15th through 100th percentiles of the boys Pull-ups; and across the board in the boys' and girls' One mile Run/Walk. The established norms will be beneficial to faculty and students for future use in measuring students' fitness levels and achieving individual goals.

APPROVED BY RESEARCH COMMITTEE: MAY 1997

David Bacharach, Chairperson

APPLIED PSYCHOLOGY

EFFECTS OF A TOKEN VS. NON-TOKEN REINFORCEMENT SYSTEM IN TEACHING AUTISTIC CHILDREN

Darin Todd Ackre

Token reinforcement systems have been effective in the application of behavioral contingencies on children with autism. There is, however, no illustration in the literature that provides a rapid means of determining the comparative effectiveness of a token system on autistic children. This study utilized a within-subject multi-element design to compare token and non-token reinforcement systems on two autistic males who were 3 ½ -and 4 years-old. The task used for the comparison was a receptive discrimination task.

Results indicate for Child 1 both reinforcement systems maintained non-differential responding with regards to the receptive discrimination task. For Child 2, differential responding was maintained by the two reinforcement systems. Individual differences and other confounding variables may account for these findings.

APPROVED BY RESEARCH COMMITTEE: SEPTEMBER 1997

Marilyn Jensen, Chairperson

THE USE OF SYSTEMATIC DESENSITIZATION AND STUDY SKILLS TRAINING IN TREATING TEST ANXIOUS UNDERGRADUATE COLLEGE STUDENTS

Pamela M. Clausen

The effects of utilizing a cognitive and behavioral treatment for test anxiety was analyzed. Thirteen undergraduate college students were either treated with systematic desensitization, study skills training, or a combination of systematic desensitization and study skills training. The subjects' actual behavior was measured using the Study Behavior Inventory (SBI) and level of test anxiety was measured using the Test Anxiety Inventory (TAI). There is no significant difference between the type of treatment and differences between the pre and post TAI scores, as indicated by a Kruskal-Wallis Test.

Possible relationships between changes in subjects' scores on the TAI and SBI were also analyzed. A Spearman correlation did not find a significant relationship between the difference between the pre and post TAI worry scores and the difference between the pre and post SBI factor 2 (short term study habits) scores. Likewise, a Spearman correlation did not find a significant relationship between the difference between the pre and post TAI emotionality scores and the difference between the pre and post SBI factor 1 (academic confidence) scores.

APPROVED BY RESEARCH COMMITTEE: NOVEMBER 1997

Avelino Mills-Novoa, Chairperson

BRINGING "VIRTUAL REALITY" INTO THE TRADITIONAL BEHAVIOR ANALYSIS ANIMAL LABORATORY

Morten Haugland

An introductory class in behavior analysis (49 students) served as subjects in an experiment assessing the effectiveness of computer simulation as a substitute for live rats in conducting laboratory exercises. "Sniffy, the Virtual Rat" (Krames, Graham, & Alloway, 1995) was used for the computer simulations. A between subjects design was used with random assignment of students to four experimental groups.

Training in each condition included one exercise in shaping and one exercise in basic schedules of reinforcement. The students' shaping skills were assessed during the first exercise, and at the completion of the second exercise. Dependent measures included the time required and the number of reinforcers delivered to shape a bar pressing response in live or virtual rats. In addition students' quiz scores over the two laboratory exercises were compared.

The computer simulation group performed significantly higher on quizzes, and required less time in shaping the bar pressing response in an untrained "Sniffy" during the second exercise compared to students that had worked with live rats ($\alpha = 0.05$). There was also no difference between students that had worked with "Sniffy" and students that worked with live rats in shaping of a live rat during the second shaping test. These results suggests that computers can be a viable substitution to the use of live animals.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1996

Robert J. Murphy, Chairperson

A COMPARISON OF PROMPTING PROCEDURES APPLIED DURING INTENSIVE BEHAVIORAL INTERVENTION

John Francis Miller

In this study, a combined trial-and-error, most-to-least prompting procedure (commonly termed "No-No Prompt") was compared to simple most-to-least prompting procedure as applied during intensive early intervention. Two children, ages 27 and 30 months, who had been diagnosed with autism, participated. In an alternating treatments design, sixteen tasks were taught in phase one, four in each of four skill areas. Skill areas included gross-motor imitation, one-step compliance, receptive color and shape discrimination or identity matching for color and shape. The two independent variables were applied in a counterbalances sequence (with the exception of the second and third skill for child 2) across tasks to control for carryover effects. Mastery criteria for each task was five consecutive correct trials within a maximum of 120 trials. In phase two, the alternate treatment was applied to any unlearned tasks utilizing the same procedure as in phase one.

Results demonstrated that the errorless learning procedure, most-to-least prompting, was more efficient and effective for both children in terms of trials to criterion, errors to criterion, and number of tasks learned.

APPROVED BY RESEARCH COMMITTEE: APRIL 1998

Kimberly A. Schulze, Chairperson

EFFECT OF SUBSTITUTE PAIRING ON DISRUPTIVE BEHAVIOR

Octavian Rajuuta Nephilim

Students often engage in disruptive classroom behaviors, particularly when substitute teachers are present. Students' classroom behavior is under stimulus control, i.e., cooperative classroom behavior when the regular teacher is present and disruptive behavior occurs when the substitute teacher is present.

The purpose of this study was to investigate the effect of pairing a substitute teacher with the regular teacher prior to assuming classroom responsibilities. Another purpose was to study the effect of pairing on classroom behaviors of middle school students.

Results showed a significant decrease in disruptive behavior after pairing. Specific classroom target behaviors included talking to others, out of seat, trips to the bathroom and/or locker, and touching or hitting others. Key terms included stimulus control, stimulus equivalence, stimulus discrimination, transitory, reactivity, and substitutes.

APPROVED BY RESEARCH COMMITTEE: MAY 1998

Eric Rudrud, Chairperson

READING CONSULTANT

THE IMPLEMENTATION OF THE COMMUNICATIONS 2000 CURRICULUM AND ITS RELEVANCY TO THE MINNESOTA GRADUATION STANDARDS

Marcia K. Bouchie

Applied communication curriculum, *Communications 2000*, was utilized to increase secondary educational students' business communication skills (written and literacy preparedness for job skills). The correlation between this

instructional material and the Profile of Learning outcomes under the Minnesota Department of Children, Families, and Learning Graduation Standards were evaluated. Although the cognitive assessment showed a low gain in the student scores from the pretest to the posttest, the demonstrated proficiency was high. Student portfolio assessment when matched with two standards of the Profile of Learning received a high correlation.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1996

Russell Schmidt, Chairperson

SPECIAL EDUCATION

DIFFERENCES IN THE LEISURE ACTIVITIES OF MATHEMATICALLY ADVANCED SECONDARY SCHOOL STUDENTS

Mary L. Cornell

A survey designed to gather information about extracurricular and leisure activities was distributed to 332 tenth, eleventh, and twelfth grade students between March 30, 1997 and June 1, 1997. Two hundred and ten surveys from the original sample were analyzed by grouping the various activities into eleven activity indices. Each index was then compared statistically using a series of one-way ANOVAs, and Tukey's box plots. Students were also divided into six groups based on their mathematical accomplishments, and their gender.

Statistically significant differences were found for six of the eleven Activity Indices. The Academic Index, Math Index, and Science and Technology Index show that there are relationships ($p < 0.001$) between the level of math achievement and participation in math, academic, and science and technology oriented activities, respectively. Students with the higher levels of mathematic achievement participate in these activities more often than students with lower levels of mathematical achievement.

The Gaming Index demonstrates that both gender and mathematical achievement are related to participation in gaming activities such as role playing games, logic, board, and card games. Students with high levels of mathematic accomplishment were found to participate more frequently than other students. Males participate in gaming activities more frequently than females.

The music Index indicates that there are differences ($p < 0.01$) between males and females, and among groups with different levels of mathematical accomplishment. Unlike the results for the other indices, the females are the most frequent participants in music related activities. Females with the highest mathematical accomplishments are also the most active in music related activities.

The Social Index shows that there are differences ($p < 0.001$) between males and females. The Social Index does not seem to be related to achievement in mathematics.

The results show that students demonstrating a high level of mathematical accomplishment are more likely to participate in certain leisure activities. The data suggest that, except for social activities, gender is not nearly as important in the selection of leisure activities as the level of mathematical accomplishment.

APPROVED BY RESEARCH COMMITTEE: NOVEMBER 1997

Jerry Wellik, Chairperson

A STUDY OF SCREENING TOOLS USED TO IDENTIFY ADHD

Jeffrey E. Cziok

This follow-up study was conducted to see if the use of the Test of Variables of Attention (TOVA) was a reliable screening tool over time when used as an instrument to assist in the diagnosing of ADHD. Fifteen subjects participated from two central Minnesota towns. Each subject participated in the project by taking a 22.5-minute TOVA. Of the 15 subjects, 6 were considered within normal limits, and 9 were deemed deviant for ADHD. During the original study conducted in 1992, one subject was characterized by the TOVA for being at risk for ADHD, while the remaining 14 subjects were considered within normal limits.

The use of the TOVA as a screening tool over time was not as reliable as had been anticipated. This examiner feels that the TOVA, when used in conjunction with other assessment tools, is the most reliable way to gather information in order to obtain a clear understanding of ADHD symptomology.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Mary Beth Noll, Chairperson

PROMOTING HEALTHY CONFLICT RESOLUTION THROUGH PEER MEDIATION

Nancy C. Dockendorf

PROBLEM: The purpose of this study is to examine the effects of a conflict resolution program such as peer mediation which was implemented in a fifth- and sixth-grade school over the course of one school year. The study involved an examination of teachers' and students' attitudes toward peer mediation as well as an analysis of data reported from peer mediation sessions.

PROCEDURE: While conducting the study, qualitative and quantitative data were obtained by the researcher. Ten teachers and 20 students who had been involved in the program were randomly selected to participate in interviews pertaining to the program and their experiences with peer mediation. Subjects' responses were recorded, common themes were extracted from the interviews, and frequency of responses were tabulated.

The quantitative portion of the study involved analyzing data collected on the Peer Mediation Reporting Forms. Data pertaining to each peer mediation session such as who was involved, type of conflict, and whether the conflict was resolved were documented following each peer mediation session. After a 7-month period of program usage, the data evaluated.

RESULTS: The data collected indicated that peer mediation was an effective method for teaching and promoting healthy conflict resolution in students. Students reported a 97% resolution rate for conflicts referred to peer mediation. Mediators, disputants, and teachers reported numerous benefits of the program and cited various suggestions for program improvement. All of the interview respondents indicated that the program should be expanded and continued in the future.

APPROVED BY RESEARCH COMMITTEE, JULY 1996

Mary Beth Noll, Chairperson

JOB SATISFACTION AND ATTRITION: CRITICAL ISSUES FOR SPECIAL EDUCATORS

Julie Ann Gross

The purpose of this study was to: (a) survey job satisfaction of special education teachers, (b) determine the number of special education faculty leaving special education, (c) determine the reasons for leaving special education, and (d) determine if there were any differences between special education teachers who left a position and those who stayed.

The sample represented 162 current special education teachers and 43 former special education teachers who taught in the St. Cloud School District over the past 7 years. Of the 162 current special education teachers surveyed, 71% completed the survey, and of the 43 former special education teachers, 79% completed the survey.

Results indicated that on several variables--age of respondent, number of years teaching, and categories of special needs students taught--there was a significant difference between current special education teachers and those who left a special education teaching position in the past 7 years. The results also concluded that the variables of gender, highest degree earned, marital status, and students' ages indicated no significant differences between the two subject groups.

The results of job satisfaction for current special education teachers indicated most were satisfied with job factors and that relationships with students had the most positive responses. Paperwork was a factor that was least satisfying.

The survey completed by special education teachers who left a special education position indicated a few select items contributed to a decision to leave special education. Those factors were: (a) a delivery method change, (b) inadequate job security, (c) paperwork, (d) lack of administrative support, and (e) emotional exhaustion.

It is recommended that similar studies be conducted on job satisfaction and attrition using a larger sample size for those who left a special education teacher position dating back further than the past 7 years and also using a special education and regular education comparison.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1996

James Lewis, Chairperson

THE IMPACT OF CHRONOLOGICAL AGE ON REFERRAL TO SPECIAL EDUCATION

Kelly Marie Haws

The purpose of this study was to determine if there is a relationship between chronological age and the referral to special education. It also attempted to determine if gender had an impact on referral.

The procedure included a tabulation of birth dates and gender of students referred to special education at Sartell Elementary School from September 1988 through May 1996. The students were placed into one of five groups according to birth date. Chi-Square, goodness of Fit, and frequency polygons were used to examine the data.

There was a significant relationship between chronological age and referral to special education for boys and the group of all students referred. The null hypothesis was rejected with a level of significance of .01 for boys and .05 for all students referred to special education. There was failure to reject the null hypothesis for girls.

The child's chronological age and readiness level should be given careful consideration when parents decide to start their child in school.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1996

Joan Kellett, Chairperson

THE EMPLOYMENT STATUS OF YOUNG ADULTS WITH LEARNING DISABILITIES: A FOLLOW-UP STUDY OF FORMER LD STUDENTS FROM CENTRAL MINNESOTA

Tammy L. Lacey

PROBLEM: The purpose of this study was to investigate the postschool status of young adults with learning disabilities who left Willmar High school as a senior or graduated between the years of 1988-1993. These young adults are divided into the following groups (a) young adults who left high school between 1988-1992 who were a part of the 1994 Minnesota Post School Follow-up study, (b) all young adults who left Willmar High school or graduated during the 1992-1993 school year and, © the combination of groups "a" and "a-b" from the 1987-1992 group and the 1992-1993 group.

PROCEDURE: The groups for this study include 60 young adults classified with a learning disability who left Willmar High school/graduated during the 1988-1993 school years. Twelve females and 18 males participated in this study. Young adults were identified by Child Count records received from the Willmar Public schools data. Telephone interviews were conducted using a survey adapted from the 1994 Minnesota Post School Follow-up study. Data were summarized using mean values and percentages across a range of variables, with special focus on employment issues variables.

FINDINGS: The results of the study indicated that 87% of subjects were employed with 92% of those employed working at competitive job sites (generally entry level or semi-skilled position). Almost one-half of employed subjects working 41+ hours per week. Ninety-four percent of subjects completed high school with the majority of subjects completing an apprenticeship or on-the-job training program following high school. Fifty-percent of the subjects reported being unemployed at some time since leaving high school. Social Services was the highest utilized postschool service. The majority of respondents found their current job with the help of a friend or family member. Subjects reported satisfaction with friendships, free time activities, academic and independent living training received in high school. Thirty percent of subjects rated the job training received in high school in the not very/not at all satisfaction range. Subjects reported the most interest in receiving additional services in the areas of gaining legal help or advice and managing money. The lowest reported need for additional assistance was in the area of transportation.

APPROVED BY RESEARCH COMMITTEE, OCTOBER 1996

Eva Gadberry, Chairperson

TEACHERS' ATTITUDES ON INTEGRATION

Annemarie Nelson Loehning

The purpose of this study was to assess a select group of elementary teachers' attitudes toward the integration of students with moderate/severe impairments into the regular classroom setting.

The sample used for this study was the entire population (n=62) of Bendix Elementary School administration and contract instructional staff. Three nationally developed surveys were selected due to their simplicity, objectivity, and speed of completion/scoring. The Moderately/Severely Handicapped Integration Checklist (M/SHIC), Teacher Knowledge/Experience Survey, and The Belief Scale were administered to the sample.

Eighty-five percent of the sample responded to the survey. The respondents were grouped by grade levels for comparison purposes. The four groups broke down into these categories: Kindergarten-third grade teachers, fourth-sixth grade teachers, special education teachers, and specialists (teachers who teach music, media, computers, etc.).

The results show that 94% of the time, the 14 students with moderate/severe impairments at Bendix are being integrated. The four respondent groups are all significantly in favor of integration. The questions that reflect an anti-integration belief were answered mostly with uncertain responses.

In conclusion, a list of recommendations was generated from the results of the surveys, including: (a) the provision of adequate training to all staff; (b) the provision of adequate training of all general education students; and (c) the provision of adequate communication channels.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Eva Gadberry, Chairperson

A STUDY OF FAMILY ASSETS AND THE MASTER STUDENT

Cheryl Lynn Mickelson

PROBLEM: This study attempted to identify family assets that correlated to children who demonstrated respectful, responsible, belonging behaviors at school.

PROCEDURE: All third-grade students at Garden City Elementary School were given a survey to take home and have their parents complete. The surveys were coded to distinguish between four levels of Master Student Status. Questions related to family characteristics. Fifty of the 57 surveys were completed and returned.

CONCLUSIONS: The following conclusions were determined from the data:

1. Parental participation at school correlates to Master Student Status Level.
2. There was no correlation between Master Student Status Level and homework, organized activities, parental job status and satisfaction level, number of parents at home, time spent watching television, time spent without an adult present, or initiating phone conversation.

RECOMMENDATIONS:

School district must make every effort to increase the amount of parental participation by having desirable activities for parents at convenient times.

APPROVED BY RESEARCH COMMITTEE, MAY 1996

Marc Markell, Chairperson

COLLABORATIVE CONSULTATION-A MEANS TO ACHIEVE MATH SUCCESS IN AN INCLUSION SETTING

Gary V. Milacnik

During the past decade, there has been a strong movement toward educating special needs students in the mainstream classroom. This shift away from resource room teaching has presented new challenges to not only the special education teachers, but also to regular education staff.

Is it appropriate for learning disabled and other handicapped students to become part of the mainstream class? For many years, the pull-out delivery system of service has been the most common method for serving the majority of disabled students (White & White, 1992). Can learning disabled students find success in the inclusion setting, and will it encourage them to continue with more difficult classes?

This thesis project examined the possible advantages of using a collaborative consultation model in a inclusion setting for high school special needs students in a variety of mathematics classes. The classes included

applied mathematics, algebra techniques, algebra one, and basic geometry. The project provided feedback on what type of collaboration best met the needs of students with special needs and on the achievements of these students.

While there exists barriers for teaching students with special needs in mainstream classes, a strong collaborative consultative program involving the mainstream mathematics teachers along with a special education teacher with a mathematics background successfully eliminated these obstacles.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1996

Jerry Wellik, Chairperson

A FOLLOW-UP STUDY OF EARLY CHILDHOOD SPECIAL EDUCATION STUDENTS TRANSITION INTO KINDERGARTEN

Paula Pazzelli-Marks

The purpose of this study was to determine the impact of the Early Childhood Special Education program in the St. Cloud school district and the learning status of the students after they have transitioned into kindergarten without any direct special education services.

It was hypothesized that there would be no significant difference between the students who did qualify for direct service and the students who did not qualify for direct service and the days absent, number of years enrolled in ECSE, and the results of the Bracken SRC (School Readiness Composite) and the Kindergarten Survival Skills Checklist scores (KSSC).

The results of the study suggest that the students who spent more than one year in the ECSE program were more likely to receive direct special education services by the end of the kindergarten school year. The more school days missed in kindergarten also indicated a higher need for direct services for those students.

There were no significant differences between the Bracken scores or the KSSC scores in relation to predicting who would receive special education services.

APPROVED BY RESEARCH COMMITTEE, MAY 1996

James F. Lewis, Chairperson

THE EFFECTS OF THE PROCESS APPROACH TO WRITING ON STUDENTS WITH A LEARNING DISABILITY

Sandra L. Perrin

There were two classes of subjects: experimental and comparison. Six students participated; three students classified as having a learning disability (LD) with average IQs (90-100) and three students as a comparison group. The students with LD were paired with a same gender peer from the same classroom. Performance baseline was established at the beginning of the school year for the students with LD. They were given three writing probes over a period of one week. The students were given a story starter and instructed to think for 30 seconds and write for 3 minutes. They were encouraged to write the full three minutes and to guess on unknown spelling. The objective scoring procedure by Hasbrouck, Tindal and Parker (1994) was used to score the sample. They were administered a weekly 3-minute probe after 4 months of using the process approach to written language instruction. The process approach to writing was used as the focus of written language instruction in the special education resource room. Students were introduced to brainstorming, story maps, and writing clear and concise information for their audiences. The six weekly writing probes were also administered to the control group.

APPROVED BY RESEARCH COMMITTEE, APRIL 1997

Floyd Ayers, Chairperson

COMMUNITY DIALOGUE IN REFORMING EDUCATIONAL SERVICES FOR EMOTION/BEHAVIORAL DISORDER

Vickie L. (Brandt) Pitney

The purpose of this study was to examine the use of community dialogue in reforming educational services for children and youth with emotional/behavioral disorders. Using a Likert type scale and open and closed-ended statements in a survey format, 59 participants from a Community Forum (dialogue) on Emotional/Behavioral Disorders rated the perceived importance of dialogue as learning conversations. By engaging in the dialogue process, participants were able to create a shared vision which resulted in a greater commitment to the priorities identified. The combined qualitative (record analysis) and quantitative (survey instrument) were used as diagnostic tools to assess (1) the extent to which the stakeholders were coordinating community resources; and (2) level of community responses to meet the educational needs of all children, including those with emotional and behavioral needs.

FINDINGS: The results of this study suggest that a community dialogue can be effective in initiating large scale community reform. By participating in a community dialogue, people came to know, understand, and respect one another on a personal basis. Participants were able to move beyond turf issues and listen for understanding to the differing points of view. The dialogue increased sense of interconnectedness, understanding of needs of children/youth, and awareness of community resources.

Coordinating services were viewed as being worthwhile yet difficult to accomplish. Respondents were not able to identify specific activities that have been coordinated, but did report a "feeling" that coordination of services is improving. Coordination of services depends on a high level of trust between agencies and families. The dialogue created a shift from "guarding turf" to being open to look at the possibilities that may exist in working collaboratively to provide services to children, youth, and their families.

In addition, study findings recommend:

- Bringing a diverse group of stakeholders together to review the identified priorities and establish work plans with long and short term achievable goals.
- Reviewing members of the sub-committees and determine if critical members are missing.
- Legitimizing the work of the sub-committees on a continual basis.
- Making a commitment to staff time, resources and incentives for participation.
- Designating "leader(s)" to facilitate the change effort.
- Developing formalized feedback system to share information with stakeholders.
- Initiating a formal collaborative process that people can support and see change happen.
- Using creativity for effective coordination and collaboration of services.
- Blending funding of funds for services.
- Celebrating successes!

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Richard Johnson, Chairperson

BEHAVIOR PLANNING CENTER EVALUATION

Brenda A. Schumann

The behavior Planning Center (BPC) is a behavioral intervention used in a rural Minnesota school district. The program was designed to allow students a productive and meaningful way to evaluate their behavior and plan for more successful behavioral choices in the future. The program has been in operation since 1993. The purpose of this study was to examine the data from the intermediate elementary level program for the 1994-95 school year, represented by approximately 700 behavioral visits. Students were classified in one of the following three groups:

General Education, Emotional/Behavior disordered (EBD), and Other Special Education. Results were also investigated by total BPC population.

Results indicated that students in general education used the most number of minutes overall. Students with emotional/behavioral disorders used the most BPC time based on the percentage of students with EBD per total population. Most visits for all students were under 30 minutes. For the total BPC population, the number of visits and total amount of minutes in the BPC increased as the year progressed.

Student responses on behavior processing worksheets indicated that students in general education wrote their own plan 51% of the time. Other students in special education wrote their own responses 1% of the time, and students with emotional/behavioral disorders wrote their responses 21% of the time.

Attempts at restitution were low and when attempted they were usually a commitment to do better, which is not true restitution. Of the available data, most students in special education were referred to the BPC for inappropriate language. Students in general education were referred for willful disruptions/silliness most often. The most commonly used prior teacher intervention was a warning, according to referral sheets.

The fourth-grade male students had the most visits and fifth-grade male students used it the second most often. The fourth-grade female students had the least number of visits. Ninety-one percent of the visits were made by male students and 9% of the visits were made by female students.

APPROVED BY RESEARCH COMMITTEE, MAY 1996

Marc Markell, Chairperson

A FOLLOW-UP EVALUATION OF THE PAUL BUNYAN SPECIAL EDUCATION COOPERATIVE, BRAINERD, MINNESOTA

Colleen C. SeEVERS

PROBLEM: To replicate a study done in 1990 by doing a survey of four groups of people to determine if there has been a change in attitudes, beliefs, and opinions since the implementation of changes that resulted from the last evaluation, and to ask the question: How well do you see the Paul Bunyan Special Education Cooperative meeting the needs of students with special needs?

SAMPLE: The evaluation consisted of 39 regular education teachers, 17 principals, 51 special education teachers, and 62 parents of students with special needs.

METHOD: The same questionnaires from the 1990 study were used, however, changes were made to reflect current label, issues, and trends pertinent to our Cooperative. The questionnaires consisted of the following four parts: (a) satisfaction rating scales from 4-0, (b) comment section, (c) overall rating scale, and (d) anonymous comment section.

RESULTS: The results of the study indicated that the Paul Bunyan Special Education Cooperative is satisfactorily meeting the needs of their students with special needs. Areas that were rated high in terms of satisfaction 6 years ago continued to rank high, and areas that required attention in the past have improved but, as the survey results indicated, continued efforts are needed.

RECOMMENDATIONS: The recommendation based on the results of the survey is that the Paul Bunyan Special Education Cooperative should continue to provide inservice opportunities for anyone involved in the education of students with special needs.

APPROVED BY RESEARCH COMMITTEE, JULY 1996

Marc Markell, Chairperson

ANALYSIS OF PARENTS' DECISION TO LITIGATE

Lynnea G. Snodgrass

Litigation against school districts by parents of special education students continues to use scarce resources both in the form of revenue used to pay attorney's fees and loss of staff time. This field study used a qualitative method of study. The research was conducted in a large suburban school district utilizing interviews of parents of special education students who had litigated against the district. The results indicate parents most likely to litigate are those who do not believe the district is providing appropriate educational programming. These results are not expected to be definitive but to provide guidance.

APPROVED BY RESEARCH COMMITTEE: APRIL 1998

Richard Johnson, Chairperson

SCIENCE PERFORMANCE OF STUDENTS WITH LEARNING DISABILITIES IN COLLABORATIVE SETTINGS

Lisa C. Sorensen

The purpose of this study was to determine how the achievement of students with learning disabilities compares to the achievement of regular education students in collaborative settings versus mainstream settings.

Subjects were ninth-grade science students. The mainstream classes were taught by a regular education teacher. The collaborative class was taught by the regular education teacher and a special education teacher. Grade scores were obtained over a period of 2 years from learning disabled and regular education students in both mainstream and collaborative settings. Scores were ranked and the Mann-Whitney "U" was used to determine if there were any statistically significant differences in the median scores among the groups.

Results from 1993 and 1995 indicate a collaborative setting appears to have a positive effect for students with learning disabilities, and a collaborative setting does not appear to have adverse effects for regular students. Specifically, results from 1995 showed no significant differences among learning disabled students in a collaborative setting when compared with their regular classmates or learning disabled students in a mainstream setting, and there were no significant differences among regular education students in a collaborative setting when compared with regular students in a mainstream setting. There were significant differences among learning disabled students in a mainstream setting when compared with their regular classmates in a mainstream setting. In 1995, with the exception of 1 quarter, the comparison of learning disabled students in a collaborative setting versus regular students in a collaborative setting, there were no significant differences among any of the groups.

APPROVED BY RESEARCH COMMITTEE: MAY 1998

Floyd Ayers, Chairperson

SOCIAL RESPONSIBILITY

THE HOSPITALITY PROJECT: INCREASING RETENTION OF AMERICAN INDIANS IN HIGHER EDUCATION

Thomas P. Andrus

THE PROBLEM:

American Indian students are withdrawing from high school and college at a much higher rate than Euro-American students because of low *self-esteem*, low *socio-economic status*, and difference in *learning styles*. Without a good education American Indians are destined to stay in a low economic status. This low economic status keeps their self-esteem in jeopardy. Low self-esteem in turn leaves American Indians believing they are not as good as people from the dominant society school.

ASSUMPTIONS:

American Indian students want to be educated beyond high school. The parents of the American Indian students now in high schools are from the Boarding School era. These parents are not eager to send their children off to a dominant society.

FINDINGS:

American Indians, as with other cultures such as African-Americans, learn in a different manner than do the people of the dominant culture. The current educational system is very linear. This linear learning process is not conducive to the American Indian circular learning method. American Indian learning, or circular learning, is an integral part of everyday life. Learning cannot be separated from any other aspect of American Indian life. American Indian students can adapt to the Western education system if three things occur. *First*, they must be secure in their feelings about themselves. *Second*, the problem of socio-economic class must be addressed. Identifying scholarships and grants not otherwise available to American Indian Students helps address the financial problems associated with college. *Third*, they must be shown how to adapt their circular thinking to the linear based education system. This research led to a possible solution to the problem of retention of American Indian students in higher education.

A SOLUTION:

The Hospitality Project at St. Cloud State University (SCSU) is designed to overcome the obstacles of American Indian students achieving academic success and help in the retention of American Indian students. The project will bridge the gaps between economic classes and the circular versus linear learning problem while raising the self-esteem of American Indian students.

APPROVED BY RESEARCH COMMITTEE: MAY 1998

Pamela Mittlefehldt, Chairperson

CLASSROOM ASSESSMENT TECHNIQUES: PERCEPTIONS OF EFFECTIVENESS FOR TEACHING DIVERSE STUDENT POPULATIONS IN HIGHER EDUCATION

Jenine B. Helmin

This thesis evaluates the use of Classroom Assessment Techniques (CATs) for effectively teaching diverse student populations (DSPs) in higher education by investigating educators' perceptions. This study addresses a potential solution to the difficulties many institutions of higher education face in responding effectively to DSPs. A review of the work of established educators of and researchers on teaching DSPs reveals a set of commonly identified and

recommended elements (strategies) for improving student learning and teaching effectiveness. This study evaluates whether the elements recommended for effective teaching and learning of DSPs are promoted by the characteristics of CATs; whether CATs are recommended for teaching DSPs; and whether CATs are believed to be effective for a wide range of faculty who teach DSPs.

Evidence was gathered by surveying and interviewing faculty who are educators of diversity issues and who have experience with CATs. The quantitative data from surveys were analyzed by calculating the frequency and the mean, and expanded upon through qualitative data from comments made on surveys and in oral interviews.

The surveys of faculty members' perceptions indicated that CATs promote the elements recommended for effective teaching and learning of DSPs; the positive responses to the twelve elements ranged from 50 to 100%, the average (mean) for each element being 87%. All respondents indicated that CATs promote the following elements recommended for effectively teaching DSPs: student feedback and voice cultivated; teaching and learning connected; differences recognized; dialogue maintained; collaborative learning encouraged. Five of six respondents (83%) indicated that CATs promote the following elements: empowerment cultivated; differing needs and abilities of students addressed; inclusion enacted; and knowing and respecting students exemplified. Four of six respondents (66%) indicated that CATs promote the following element of students' background and prior experience valued. Three of six respondents (50%) indicated that CATs promote the following element of equality assumed.

CATs are recommended by all six of the respondents (100%) for teaching DSPs. CATs are perceived to be effective for a wide range of faculty by all respondents (100%). Thus, this study of educators' perceptions supports the claim that the use of CATs is effective for the teaching and learning of DSPs.

APPROVED BY RESEARCH COMMITTEE: MAY 1998

Patricia A. Samuel, Chairperson

BLACK STUDENT ATTITUDES TOWARD BLACK LEADERSHIP

Tia Marka

The purpose of this study was to examine the attitudes Black college students towards leadership in the Black community. The study also examined Black students' attitudes towards the two historically dominant ideologies that have guided Black leadership: integrationism and nationalism.

SUMMARY:

The results of this study were obtained from a questionnaire that was distributed to Black students attending St. Cloud State during the spring quarter of 1997.

The respondents were categorized as nationalists or integrationists for this study. The demographic characteristics of these two groups were significantly different. Nationalists tended to be young and female, and integrationists were older and male. Most nationalists were from predominantly Black neighborhoods, and most integrationists were from predominantly White or mixed neighborhoods. In regard to leadership, the nationalists most often supported Louis Farrakhan, and the integrationists supported either Colin Powell or Jesse Jackson. The data also indicated that black students are just as likely to be integrationists as they are to be nationalists, and that they are most likely to not fall into either category.

APPROVED BY RESEARCH COMMITTEE: AUGUST 1997

Michael Davis, Chairperson

SPORTS MANAGEMENT

THE EFFECTIVENESS OF THE COLLEGE ONE BACK AND TWO BACK OFFENSES IN THE BIG TEN CONFERENCE

John D. Lewis

Previous research has compared the one-back and two-back offenses (Crocker & Kepple, 1992; Federico, 1991; Toledo, 1990) focusing on a coach's philosophy. However, little or no research has been conducted on the one-back offense in the Big Ten Conference (Federico, 1991) and no research has been conducted on the effectiveness of the one-back and two-back offenses.

The purpose of this investigation was to determine if there is a difference in the one-back and two-back offenses on college defenses. A Chi-square statistical method was used to determine if differences exist for each offensive style. 1st and 10, 2nd and 6, or 3rd and 4 were the situations analyzed. A total of 893 offensive plays were analyzed from all of the teams in the Big Ten Football Conference.

Data revealed that for the 1st and 10 situation, the one back offense passed more often than the two-back offense. For 2nd and 6 and 3rd and 4 there were no differences between the two offensive styles. Although not statistically significant, there were some differences in percentages of runs and passes for each offense that might be meaningful to a coach. For 1st and 10 situations the two-back offense is similar to the one-back offense during 2nd and 6 situations relative to percentage of passes compare to runs. On 3rd and 4, both one-back and two-back offenses would pass the ball 8 times out of 10, and run the ball only twice.

APPROVED BY RESEARCH COMMITTEE: MAY 1997

Robert Waxlax, Chairperson

NCAA DIVISION I GRADUATION RATES AND NCAA DIVISION II PERSISTENCE RATES

Matthew M. Reimer

There is currently little research on graduation and persistence rates of NCAA Division I and II student-athletes. This is primarily due to the availability of the necessary information. With the passage of NCAA Bylaw 30 and the federally mandated Student-Athlete Right to Know Act, information pertaining to graduation and persistence rates of student athletes is becoming readily available for further examination (NCAA, 1996a).

The study had two main focus points. The first was to determine if there was a significant difference in the graduation and persistence rates of revenue student-athletes and non-revenue student-athletes at both the Division I and II levels. This study also attempted to determine if there was a significant difference in the graduation and persistence rates of male and female student-athletes. Additionally, several sub-topics were examined in this study relating to St. Cloud State University, the North Central Conference, and the relationship between public and private institutions.

The 1996 NCAA Division I Graduation-Rates Report was used to provide information on students and student-athletes at the Division I level. The 1996 NCAA Division II Enrollment and Persistence Rates Report was used to provide information on students and student-athletes at the Division II level. For Division I, all freshmen who enrolled as full-time students in the years 1986-1989 were used as subjects for the study. For Division II, all freshmen who enrolled as full-time students in 1991 were used as subjects.

The findings indicated that non-revenue student-athletes have significantly higher graduation rates than revenue student-athletes, but that there is no significant difference in the persistence rate among these same groups.

Female student-athletes have both significantly higher graduation and persistence rates as compared to male student athletes. Private institution student-athletes have both significantly higher graduation and persistence rates as compared to public institution student-athletes.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Susan Becker, Chairperson

AN ANALYSIS OF THE THREE-POINT FIELD GOAL PERCENTAGES FROM THE THEORY OF "INSIDE-OUT"

James L. Russell

There has been very little research done to determine if the theory of "Inside-Out" can create a higher shooting percentage from the three-point line. This study will attempt to answer if the theory of "Inside-Out" is an effective way of raising the three-point shot percentage.

The researcher selected 22 games from the St. Cloud State Men's Basketball Team, which was played at Haenbeck Hall at St. Cloud State University. The games are from the past two years 1995 through 1997, each game was watched and charted. The researcher charted four different predetermined positions: (1) "Inside-Out three Pointer; (2) perimeter passing beyond the three point arc; (3) players creating their own shot with the dribble; (4) players receiving the ball from the shooter left or right side. The shooting percentage was determined in each of the four categories. Using Chi-Square the researcher attempted to find out if the theory of "Inside-Out" can help teams raise their shooting percentage from the three point line, and if the shooter shot a higher percentage when he receives the ball from the left or the right side.

The research determined that there was a significant difference in the category of the "Inside-Out" theory compared to the perimeter passing, Chi-Square = 6.251, $p < .012$. A higher shooting percentage can occur if the ball was passed from inside out and a lower percentage if the ball was passed from the perimeter. Receiving the ball from the shooters left or right had no significant difference in the Chi-Square = .028, $p < .867$. Percentage also show that there is no any difference from receiving the ball from left or right side.

APPROVED BY RESEARCH COMMITTEE: JULY 1997

Robert Waxlax, Chairperson

SR. HIGH EDUCATION

THE EFFECTS OF BLOCK SCHEDULING ON SCIENCE ELECTIVES

Todd B. Bergstedt

The purpose of this study was to determine the various effects that block scheduling has on science classes.

A demographic survey was sent out to 43 high school science teachers from Twin Cities metropolitan schools. Eight individuals were interviewed two from each school. They responded to six questions relating to how blocks are utilized in their schools, the positives and negatives of blocks, if block scheduling is the answer for time management in the future, or is there a better alternative.

Seven of the eight teachers interviewed showed overwhelming support for block scheduling. The positives of blocks outweigh the negatives and include some of the following: building better student/teacher relationships, maximizing individual attention, allowing more thorough coverage of specific topics, encourages higher level thinking, creates opportunities for longer labs, and produce a less stressful environment. The negatives include

things like, A. P. testing, not covering as much material, not adequately in-servicing teachers to instruct using blocks, and not enough time to assimilate materials.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1996

Jan Hintz, Chairperson

THE RELATIONSHIPS AMONG SELF-ESTEEM, ACHIEVEMENT, GENDER, AND PARTICIPATION IN HIGH SCHOOL MUSIC PERFORMANCE GROUPS

Mark H. Hagemeyer

Many studies have shown that a healthy sense of self-esteem is very valuable to a student's well being and his/her academic success. Researchers have generally neglected to study the level of self-esteem and achievement in high school students who participate in musical performance groups.

PURPOSE:

This study reports on the relationships among self-esteem, achievement, gender, and participation in high school music performance groups. Its purpose is to help make important discoveries about the benefits of participating in high school music performing groups. The results of this study will be important to schools and state education officials to consider when making policy with regard to music and its importance in school curriculum.

PROBLEM:

Does a relationship exist among self-esteem, achievement, gender, and participation in high school music performing groups? Other subjects related to the topic include issues of how gender relates to achievement and self-esteem, and how self-esteem and achievement relate to students who are in high school music performance groups and those who are not.

PROCEDURE:

A sample of 277 students in a small rural west-central Minnesota high school were surveyed about their self-esteem. The instrument used to find the level of the students' self-esteem was the Adult Form of the Coopersmith Self-Esteem Inventory (SEI). Along with the SEI, the students were surveyed about their participation in high school music performance groups, grade in school, and gender. The Comprehensive Test of Basic Skills (CTBS) was also used as a measure of achievement. The students' grade, gender, and participation were compared with their SEI scores and national percentile scores of the CTBS using various analyses.

SUMMARY:

There are relationships among high school music participation and achievement scores, self-esteem, and gender. The students in music performance groups had higher levels of self-esteem and statistically significantly higher achievement scores than those who did not participate.

The relationship between gender and self-esteem of the student sample is quite typical of the reported norms of the nation's student population. Females had a lower self-esteem than males. The females in ninth grade had significantly lower self-esteem than their male counterparts.

Educational experts have reported as self-esteem increases, so does achievement. The results of this study are consistent with the research. Positive correlations were found between self-esteem and achievement.

APPROVED BY RESEARCH COMMITTEE: MARCH 1998

Kenneth Kelsey, Chairperson

THE IMPLEMENTATION OF A FAMILY/SCHOOL/COMMUNITY PARTNERSHIP PROGRAM

Pamela Ramstad

PROBLEM:

Through an accreditation process, Buffalo High School discovered the need for an improvement in their parent and community involvement. A more effective manner of utilizing these resources was needed.

PROCEDURE:

A family/school/community partnership model was chosen to facilitate the improvement process. Current strengths were identified, pilot programs implemented, and ideas for future improvements generated. The programs were assessed both formally and informally.

FINDINGS:

Many of the programs implemented resulted in an increase in the number of parents and community members involved. In other instances, the increase in involvement as a direct result of the work of the Parent Involvement committee was difficult to assess.

CONCLUSIONS AND RECOMMENDATIONS:

The researcher recommends that to increase likelihood of success of a comprehensive family/school/community partnership at the senior high school level, a full-time paid position of a coordinator should be established.

APPROVED BY RESEARCH COMMITTEE: October 1997

Kenneth W. Kelsey, Chairperson

EXERCISE SCIENCE

REPRODUCIBILITY OF EXCESS POSTEXERCISE OXYGEN CONSUMPTION FOLLOWING SUBMAXIMAL CYCLING IN FEMALES

Robyn A. Abear

The purpose of this study was to determine the reproducibility of excess postexercise oxygen consumption (EPOC) following four identical bouts of 70% $\text{VO}_{2\text{max}}$ cycle ergometer exercise in females. Fifteen females (mean \pm SD) age 22.87 ± 3.52 years, $\text{VO}_{2\text{max}}$ 41.36 ± 7.03 $\text{ml}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$, and $17.07 \pm 3.63\%$ body fat participated in the study. An incremental $\text{VO}_{2\text{max}}$ test was performed on a Quinton Excalibur electronically braked cycle ergometer to determine a workload corresponding to 70% $\text{VO}_{2\text{max}}$ for the experimental cycles. Four experimental trials were performed on separate occasions at the same time of day with subjects four hours postprandial and having refrained from physical activity and caffeine for the previous 12 hours. Each experimental trial consisted of a 30 minute supine rest with O_2 consumption measured the last 15 minutes via a Medical Graphics CPX/D metabolic cart to determine pre-exercise baseline. Subjects then moved to the cycle ergometer for a three minute warmup at a self selected intensity then performed 30 minutes of exercise at 70% of their $\text{VO}_{2\text{max}}$. Immediately following exercise, subjects returned to the resting position and O_2 consumption was measured continuously until pre-exercise baseline ($\pm 5\%$) was reached with a limit of one hour. Pre-exercise baseline, EPOC magnitude, EPOC duration, exercise energy expenditure and postexercise energy expenditure were compared using a Fisher's post-hoc. The 0.05 level of confidence was accepted as statistically significant. The pre-exercise baseline was significantly greater for trial one than for trials

two and three (4.23 ± 0.95 , 3.70 ± 0.86 , 3.53 ± 0.68 , and 3.74 ± 0.80 ml.kg⁻¹.min⁻¹ T1-T4). However, the percent of VO_{2max} (71.8 ± 3.32 , 70.0 ± 3.27 , 69.6 ± 2.95 , and $70.4 \pm 2.97\%$ VO_{2max} T1-T4) and the exercise energy expenditure (258 ± 59.5 , 253.92 ± 56.1 , 552.5 ± 57.5 , and 253.8 ± 56.3 kcals T1-T4) was not different between trials. Also the magnitude (2.30 ± 1.12 , 2.77 ± 1.06 , 2.04 ± 0.64 , and 3.33 ± 2.98 liters for T1-T4) and the duration of EPOC (16.45 ± 11.4 , 22.12 ± 16.2 , 13.80 ± 5.8 , and 22.73 ± 20.5 minutes for T1-T4) were not significantly different between trials. The exercise energy expenditure/EPOC energy expenditure percent was (4.33 ± 1.83 , 6.07 ± 4.40 , 4.05 ± 0.86 , and $6.35 \pm 5.23\%$ T1-T4) with a mean value for all trials of $5.2 \pm 3.62\%$. The data suggested that EPOC following 30 minutes of cycling at $70\% VO_{2max}$ is reproducible in females, although there is variation within subjects between trials. Also, it was determined that females of this age group may apply an additional 5% to the exercise energy expenditure to determine total caloric cost following an exercise session of this type of weight management purposes.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

David Bacharach, Co-Chairperson

John Kelly, Co-Chairperson

A COMPARISON OF HIGH SCHOOL AND COLLEGE LONG SNAPPING FINE TECHNIQUES

Mark Blegen

The purpose of this study was to identify the differences that exist between college and high school long snappers. Six college and seven high school longsnappers were filmed performing 10 long snaps. College snappers were both faster (0.4s) and more accurate (18 cm) than their high school counterparts. These differences were related to body positioning. College snappers exhibited more shoulder flexion and elbow extension in the set position phase along with greater center of mass movement and less hip flexion during the pre-flight phase. Longsnapping experience and accuracy were significantly related ($r = -0.82$).

APPROVED BY RESEARCH COMMITTEE, JUNE 1996

Glenn Street, Chairperson

CAN COMMON FACTORS BE USED TO PREDICT ACCURACY IN THE BASKETBALL FREE-THROW

Tyler H. Gibson

One of the most important aspects of basketball is free-throw shooting. The present study involved the measurement of selected kinematic factors of the basketball free-throw through the use of high-speed cinematography. The results of the multiple regression showed the best predictors of accuracy to be center of gravity ratio, release height ratio and the variability in release height ratio. The variables formed a significant regression equation ($p < .01$) accounting for 26%, 29% and 7.1% of the variability in accuracy respectively. However, the high standard error of the estimate (4.8% at one standard error) indicated that the equation has limited usefulness in prediction free-throw

shooting accuracy. Error analysis indicates that proper camera setup is extremely important in reducing digitizing errors. Also, when looking at variability, the number of trials per subject should be at least 30.

APPROVED BY RESEARCH COMMITTEE: MAY 1997

Glenn Street, Chairperson

ICE AND IN-LINE SKATING KINEMATICS IN COLLEGIATE HOCKEY PLAYERS

William Sean Goldsworthy

The purpose of this study was to compare selected kinematic variables associated with the skating stride between ice skating and in-line skating. Fourteen Division I collegiate hockey players were filmed skating on both ice and inline skates. Eight kinematic variables were analyzed, accounting for differences in average velocity between the two skating methods. Of the eight variables, only one (WBS) showed a significant difference ($p < .01$) between skating methods. One reason for finding only one significant difference was the large variability of the subjects. This variability may have resulted from measurement error and limitations between subjects (i.e. unfamiliarity of inline skates, motivation). Error analysis indicates that proper camera setup is extremely important in reducing digitizing errors. In addition, to reduce variability the number of trials per subject should be at least five.

APPROVED BY RESEARCH COMMITTEE: JULY 1997

Glenn Street, Chairperson

THE EFFECTS OF A COMPETITIVE SEASON ON FITNESS AND STRENGTH LEVELS IN NCAA DIVISION II FEMALE BASKETBALL PLAYERS

Rosalie K. Hayenga

Fourteen members of the St. Cloud State University women's basketball team participated in a pre-season conditioning program that began in early September and lasted until the first day of official practice (October 15). The week prior to the first official practice was used to administer seven fitness and strength tests. One test was used to find the lactate threshold, and immediately after the test to find the lactate threshold the athletes completed a test on the treadmill to measure maximal oxygen consumption ($VO_{2\max}$). The athletes also participated in a 20 second Wingate anaerobic bicycle ergometer test to measure peak power output, and were given three trials to produce their maximal vertical jump height. One repetition maximums were done on the bench press and the parallel squat, and the final test was administered was the body composition test. The hydrostatic weighing technique was used for this test.

At the completion of the competitive season, the athletes were re-tested to see if any changes had occurred in their fitness and strength levels during the season. Due to injuries and terminated involvement with the team, several athlete's could not complete tests at the end of the season.

Significant increases were found in $VO_{2\max}$ (44.41 ± 5.67 ml/kg/min to 51.33 ± 5.85 ml/kg/min), VO_2 at lactate threshold (29.57 ± 5.57 ml/kg/min to 35.09 ± 6.80 ml/kg/min), and peak power on the Wingate anaerobic test (8.25 ± 0.89 W/kg to 9.29 ± 0.79 W/kg). There were no significant differences from pre-season to post-season for the maximal vertical jump heights (17.0 ± 2.4 inches to 17.1 ± 2.7 inches), for one repetition maximum on the parallel squat (207.0 ± 22.4 lbs. to 199.5 ± 31.0 lbs.), or for the body fat percentage ($22.2 \pm 4.0\%$ to $20.4 \pm 3.7\%$). The significance level ($p < 0.007$) was adjusted for the number of tests that were administered in this study.

The results of this study show that the conditioning done during the season was enough for the athlete's to maintain fitness and strength levels, and even caused a significant increase in several parameters. At the beginning of the season the athletes in this study were found to be in below average condition when compared to other studies in the literature, and this may be one possible explanation for the significant increases found in $VO_{2\max}$, VO_2 at lactate threshold, and peak power output on the Wingate anaerobic test.

APPROVED BY RESEARCH COMMITTEE: NOVEMBER 1997

Lori Ulferts, Chairperson

ACCUMULATED OXYGEN DEFICIT AS A PREDICTOR OF ON-ICE HOCKEY SKATING PERFORMANCE IN COLLEGE HOCKEY PLAYERS

Jamie A. Jerdee

This study was undertaken to investigate the relationship between on-ice tests of acceleration, top speed, and agility and a laboratory test on a treadmill designed to directly measure anaerobic power and anaerobic capacity. Ten NCAA Division III male hockey players were recruited to complete four laboratory testing sessions and one session of on-ice testing. The first laboratory session consisted of a maximal oxygen uptake (VO₂ max) test on a treadmill and a series of pilot runs on a treadmill to determine the maximum speed each subject could maintain for 15, 30, 60, 120 seconds. The second laboratory session consisted of submaximal runs of 50, 60, 70, 80% of each subject's VO₂ max in order to determine the workload that elicited these values. Supramaximal runs made up the third and fourth laboratory sessions. During one of these sessions the subjects ran at treadmill speeds designed to cause exhaustion within approximately 15 seconds and 120 seconds. During the other session the treadmill speed was set to cause exhaustion within approximately 30 seconds and 60 seconds. The order of the supramaximal runs was determined using a random block method. Blood samples were obtained immediately following and four minutes after each sprint to determine blood lactate concentrations. The total oxygen demand during the supramaximal runs was calculated from the individual regression equations developed during the preceding submaximal treadmill tests. The accumulated oxygen demand was the product of the oxygen demand and the exercise duration. The accumulated oxygen uptake was the product of total exercise time and measure oxygen uptake during the supramaximal bouts. The accumulated oxygen deficit was the difference between the accumulated oxygen demand and the accumulated oxygen uptake. The mean oxygen deficit (oxygen deficit divided by exercise duration) was used as a measure of the mean rate of anaerobic energy released. Skating performance was evaluated using three tests. The order of the on-ice tests were standardized for all subjects. The first test administered was the 'acceleration' test, followed by the 'top speed' test and the last test given was the 'agility test'. Pearson-product moment and multiple correlations were used to determine the degree of relatedness of on-ice and laboratory test performances. A $p < 0.05$ level was considered significant. Results indicate that accumulated oxygen deficit can partially explain the differences in skating speed between subjects. However, blood lactate concentrations and sprinting speed seem to be as good at predicting skating performance as measures of oxygen deficit.

APPROVED BY RESEARCH COMMITTEE: SPRING 1998

David Bacharach, Chairperson

DOES BLOOD UREA NITROGEN LEVEL INCREASE WITH INTENSITY OF RUNNING TRAINING IN COLLEGE AGE MALES?

Paul M. Kammermeier

Blood urea nitrogen (BUN) levels are used by some coaches to indicate over reaching (OR). BUN values may change differently depending on training mode and intensity. This study was undertaken in an attempt to determine the effect increasingly intense running training had on resting BUN levels, and to examine the relationship between increased BUN and OR. Sixteen college age males were divided into runner (R) and control (C) groups. After a three day period to establish baseline values for BUN, subjects in the R group underwent a pre-training test (test 1) to assess maximal performance variables. Test 1 was followed by an eight day training period, where training occurred on alternate days using progressively higher percentages of VO₂max. Subjects' protein intake was controlled, and they were furnished with a questionnaire to assess well-being. A second test (test 2) was performed immediately after the eight day training period to reassess maximal performance variables. Morning blood samples were taken daily and analyzed for BUN. A 2 x 5 between subjects ANOVA showed no interaction between training and resting BUN, or between BUN levels in the R and C groups. These data were then expressed as a percent of the change from baseline BUN (%Δ). The %Δ data were analyzed by 2 x 5 between subjects ANOVA, which revealed there was interaction. A one way ANOVA revealed a significant difference ($p < .05$) in condition. A subsequent

least squares means test for main effects showed that in the R group there was a statistically significant ($p < .01$) increase in mean (\pm SE) BUN levels from baseline to training after 80% VO₂max ($31.6 \pm 11.7\%$) and 90% VO₂max ($32.9 \pm 9.9\%$). A test for simple main effects showed the $\% \Delta$ in the R group was significantly larger than that of the C group after training at 80,90, and 100% ($p < .05$) VO₂ max. Paired *t*-tests indicated there was no significant difference between any of the maximal performance variables of test 1 and 2. Individual examination of the maximal performance variables of tests 1 and 2. Individual examination of the maximal performance variables and the questionnaires showed that three of the subjects were likely in a state of OR. Another three subjects had similar $\% \Delta$ patterns but did not show as many symptoms of OR. The evidence in this study suggests that resting BUN may rise with intensity of exercise up to 80% or 90% VO₂max. This rise in BUN in some, but not all, cases may be followed by OR, yet there is not enough evidence to conclude that increased BUN is a predictor of OR. However, with well established baselines, it can be used as one variable to assess potential OR.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1996
David W. Bacharach, Chairperson

ASSESSING THE CPX EXPRESS RESPIRATORY GAS EXCHANGE SYSTEM USING MALE ATHLETES

Amy C. Keranen

The purpose of this study was to determine the accuracy of the Medical Graphics CPX EXPRESS system at oxygen consumption's exceeding 4.25 L/min using the traditional Douglas bag method as a reference. Twelve male subjects ages 19-37 (± 5.25) years participated in two exercise sessions. The sessions were identical consisting of a max treadmill test with increases in both speed and grade. Each stage was three minutes in length followed by two minutes of low intensity walking during which gas analysis for the stage could be completed for both the manual and CPX systems. All subjects completed at least four stages of the protocol. Repeated ANOVA's were run for the first three stages for V_e , VO₂, and VCO₂ with the *p*-value adjusted for the number of ANOVA's performed ($p=0.05/3=0.0167$). There were no significant differences between the systems for the mean V_e or VO₂ at any stage: however, mean VCO₂ was higher for stages 1 and 2 by 3.8% and 3.0%, respectively. The CPX EXPRESS had previously been determined to accurately measure low to moderate exercise intensities. This study was primarily concerned with stages yielding VO₂ values exceeding 4.25 L/min. Nine subjects completed stage 5 and four subjects completed stage 6. Separate MANOVA's were performed for stages 4,5, and 6 using V_e , VO₂, and VCO₂ as the dependent variables. There were no significant interactions nor main effects for system or test time at any of these last three stages where VO₂ averaged 4.34, 4.61, and 4.83 L/min, respectively. Results of this study suggest the CPX EXPRESS measures respiratory variables at higher intensities with acceptable accuracy.

APPROVED BY RESEARCH COMMITTEE: MAY 1998
David W. Bacharach, Chairperson

CREATINE SUPPLEMENTATION AND MULTIPLE SKATING TASK PERFORMANCE IN DIVISION I HOCKEY PLAYERS

Benjamin Carter Noonan

The purpose of this study was to examine the effects of fatigue on drop-off in performance times of high intensity skating drills completed before and after a simulated period. Also examined was the effects of creatine (Cr) supplementation in mitigating this drop-off. Twelve college age Division I hockey players were divided into two groups placebo (Pl, $n=6$) and creatine (Cr, $n=6$). Subjects completed timed skating courses before and after a simulated period of hockey. These courses consisted of sprints between the blue, red, and goal lines, and required

approximately 23 seconds to complete. The simulated period was a combination of skating, shooting, and checking, designed to mimic the work experienced during a typical period of play. Subjects were then given either a placebo (370 g of CHO per day) or creatine (370 g CHO and 20 g Cr) for six days upon which time the performance testing and simulated period were repeated. Blood samples were taken both pre and post supplement, immediately following the period and after the final skating drill. A two by two ANOVA with independent variable of supplement condition (Pre or Post), and group (Cr Pl), was run to identify differences and interactions in the subjects drop-off times. Significance ($P < .05$) was obtained only when looking at changes in drop-off times for the main effect of supplement condition for both groups combined. Main effect of group ($P < .11$) was not significant, nor was there any significant interaction ($P < .12$) between groups response across supplement condition. Although the main effect of group was not significant, an effect size of 0.67 was calculated for the Cr group's drop-off times, indicative of a fairly strong treatment effect. To learn more about the relationship of Cr to fatigue in the sport of hockey, additional research with a tighter control of work intensity, larger sample size, and match pairing on drop-off times in addition to skating velocities is needed.

APPROVED BY RESEARCH COMMITTEE: APRIL 1998

Glen Street, Chairperson

CAN THROWING CORDS OR ARM ERGOMETRY ENHANCE THROWING VELOCITY IN COLLEGIATE BASEBALL PLAYERS?

Dean Alan Stulz

This study was conducted to determine the effects of supplementing a traditional baseball throwing program with Throwing Cords (TC) or arm ergometry (AE) on throwing velocity, internal rotator (IR) strength, and shoulder external rotation (ER) ROM. Twenty-three Division II Varsity baseball players (Mean age 19.5) were tested on throwing velocity, IR strength of the throwing arm, and shoulder ER ROM of the throwing arm. Subjects were randomly assigned to one of three training groups: traditional (T), traditional plus Throwing Cord (TC), and traditional plus arm ergometry (AE). Training consisted of throwing five times per week for the first two weeks, then four times per week for the remainder of the five week training period. Subjects in the T group followed the team program while the TC and AE groups substituted the traditional training two sessions per week with either the TC or AE. Training sessions with the TC and AE involved performing the throwing motion for six sets of 10 repetitions while overcoming the added resistance. Statistical analysis using a single factor ANOVA revealed a significant difference ($P < .05$) between groups prior to training. For this reason, an ANCOVA using the pre study values as the covariate was used to analyze the data. No significant differences ($P < .05$) were found either within or between groups for the three dependent variables (average ball velocity, shoulder ER ROM, and IR peak torque). A moderate correlation was found when post-test values for ER ROM and IR peak torque were compared with post-test velocity ($p = .01$, $r = .60$, $R^2 = .36$, $RMS = 3.2$). Ball velocity was correlated with ER ROM ($r = .35$, $p > .1$), and IR peak torque ($r = .47$, $p < .02$). Although a statistically significant correlation was found for IR peak torque, only 22% of the total variability of ball velocity can be explained by IR peak torque. This added to the SEM of ± 3.4 mph, makes IR peak torque of little practical use in predicting ball velocity with any accuracy. To learn more about the relationships between IR strength, shoulder ER ROM and ball velocity, additional research with a longer training period, greater control of the amount of throwing being done and more subjects per group is needed.

APPROVED BY RESEARCH COMMITTEE: MAY 1997

David Bacharach, Chairperson

PREDICTABILITY AND VALIDITY OF BEST DEPTH JUMP BOX HEIGHT

Joseph A. Vardas

Depth jumping is a form of plyometric training in which an athlete drops from a box and immediately rebounds upwards upon contact with the ground. Best depth jump (BDJ) box height is the drop height that results in the highest rebound vertical jump. This study sought to determine if BDJ box height could be predicted from the following variables: vertical jump, thigh circumference, height, weight, and age. Twenty male subjects ages 16-26 years ($M = 21.4 \pm 2.6$) familiar with depth jump training performed four depth jumps at each of the following randomized box heights: 20, 30, 40, 50, 60, 70, and 80 cm. The mean of the four trials was used to represent each drop height. A backwards stepwise regression revealed that no single or combination of independent variables were able to accurately predict BDJ box height ($r = .53, r^2 = .28$). As a follow-up procedure, a one way repeated measures ANOVA determined that jump and reach scores between the 7 box heights did not differ significantly from one another, $F(6,133) = .194, p < .98$. Another one way repeated measures ANOVA determined that there were no significant differences between means of the four jump trials at each box height, $F(3,76), p < .99$. Testing for BDJ box height with current methods may not elucidate the appropriate BDJ box height because only one trial at each box height is performed and there is too little variability between box heights and relatively too much variability within trials to accurately determine a BDJ box height.

APPROVED BY RESEARCH COMMITTEE: MAY 1997

David Bacharach, Chairperson

SELECTED SUBJECTIVE AND OBJECTIVE CLINICAL EXAM FINDINGS: ARE THEY PREDICTORS OF CERVICAL PAIN IN ATRAUMATIC COMPUTER WORKERS

Larry S. Wallner

Clinicians use subjective and objective data when evaluating patients. The purpose of this study was to determine if a common evaluation of six clinical variables is a predictor of cervical discomfort for atraumatic patients. Twenty-two subjects (17 females, 5 males) were gathered from a sample of computer employees at a major company with corporate headquarters in Minneapolis, MN. These subjects were employees who sit all day at their computer for their regular employment, excluding regularly scheduled breaks and lunch. Subjects were verbally interviewed regarding: typical duration of workday sitting/bending/reaching activities; years at present type of occupation; age; and hours of exercise and/or physical activity. The 'natural' head and shoulder sitting postures were recorded by video. These six variables were analyzed statistically using a stepwise regression, with self-rated intensity of cervical discomfort (0-10 scale) in the past one month as the dependent variable. Age, with a correlation of $R = .567$ ($R^2 = .321, RMS = 2.7, p < .0060$), was the only variable correlating with maximal cervical discomfort in the past one month. This study suggests that other factors not measured in this study (e.g. postural changes occurring throughout a typical workday or stress level) may be better predictors of cervical discomfort. Additional research is needed to determine what other factors might be good predictors of cervical area discomfort in atraumatic computer workers.

APPROVED BY RESEARCH COMMITTEE: FEBRUARY 1998

Glenn Street, Chairperson

FINE ARTS & HUMANITIES

ART

FEASIBILITY OF USING COOPERATIVE LEARNING FOR ELEMENTARY EDUCATION MAJORS ENROLLED IN PRE-SERVICE ART COURSES AT HIGHER INSTITUTIONS OF LEARNING

Susan Heath Hendershot

PROBLEM: The purpose of this study is to assess the successful use of cooperative learning strategies when addressing "art fears" and introducing comprehensive course content.

PROCEDURE: Various hypothesis were researched concerning students' "art fears" and the need to introduce more course content. Surveys (of previously and currently enrolled students), the workshop session and video formats were developed to determine the degree and definition of "art fears" and the role competition plays. Curriculum was designed and implemented according to the data collection.

FINDINGS:

1. "Art fears" were present.
2. Competition played a part in art fears; the degree was not assessed.
3. Pre-enrollment fear, delay in enrollment, until the end of students's academic schedule was not present.
4. Cooperative strategies eased competitive fear.
5. Longevity assessment indicated the application of cooperative strategy.
6. Cooperative strategies were implemented without inhibiting leadership, risk taking and divergent thinking.
7. Workshop participants indicated the success of cooperative strategy and the interest to learn more.
8. Comprehensive course content can be introduced using cooperative strategy and students felt comfortable in groups of two or four.
9. Discipline Based Art Education and Cooperative learning were compatible.
10. The 1990's cooperative definition has expanded the 1960's collaborative approach of team members sharing supplies such as paint.

SUGGESTIONS FOR FURTHER STUDY:

1. Revise course content using cooperative learning strategies.
2. Research competition using cooperative team approach.
3. Research quantitative data using retention (long term effect/longevity/transfer of concepts over a period of five years).
4. Research and interpretations of roles and tasks as seen by traditional and non-traditional students within the groups.
5. Expand time frame of group experiences: groups two and four.
6. Develop each component of Discipline Based Art Education using the jig-saw strategy.

APPROVED BY RESEARCH COMMITTEE, DECEMBER 1996

Lee Gutter, Chairperson

ENGLISH

THE RHETORICAL FUNCTION OF TRAGIC COMPONENTS IN AMERICAN *FILM NOIR*: APPROPRIATING ARISTOTLE'S POETICS AS A TRAGEDY *NOIR* CRITICAL PARADIGM

Eric Thomas Beckstrom

Some critics have directly acknowledged *film noir*'s relationship with classical tragedy, and many critics routinely employ the jargon of tragedy in their commentary ("the tragic hero," "the downfall," etc.): yet no one has developed a paradigm that identifies and explains the function and interplay of *noir*'s tragic components. In addition, much past and current criticism defaults to a conception of *film noir* that overemphasizes the centrality of deterministic fate to the films.

This paper refutes the latter assumption, and revalidates the importance of tragedy to *film noir* studies by gathering the bits of tragedy strewn throughout *noir* criticism into a coherent, *Poetics*-based *noir* paradigm. An organized appropriation of the six parts of tragedy as explained by Aristotle--Plot (Reversal of Fortune, Recognition, Tragic Incident), Character, Thought, Diction, Chorus, and Scenery--allows for systematic yet expansive analyses of film components, the relationships among these components, and the themes emitted by these relationships.

Actions form the basis of cause and effect, which constitute Plot. The tragedy *noir* paradigm emphasizes the centrality of Character (which indicates personal motives and what things a person chooses or avoids) and Thought (the rhetoric characters use to affect themselves and the people around them) to Plot action; for it is by Character and Thought that we qualify a personage's actions. Rather than being deterministic, *noir* fate is comprised of Character and circumstance.

Film noir voice-over monologue is an appropriation of the Greek Chorus. It reveals a character's Thoughts and emotions in relation to actions, circumstances, and other characters. Correspondingly, the *noir* Chorus displays a character's attitudes and ideology. Through its intrarhetorical commentary, the Chorus joins together the various Plot actions.

Aristotle's conception of Diction included common and elevated (metaphors, unusual words) verbal style. *Film noir* employs common Diction in the form of hard-boiled language, and elevated Diction in the form of symbolic visual properties such as stylized mise-en-scene. *Noir* common Diction can simultaneously be elevated Diction when it uses metaphors and specialized, hard-boiled phraseology.

The *Poetics*-based tragedy *noir* paradigm is offered for both practical application and in an effort to encourage scholars to include the tragic influence in their descriptions of film *noir* as routinely as they have *noir*'s other substantive elements.

Films *noir* discussed in this study include *The Big Heat*, *The File On Thelma Jordon*, *The Strange Love of Martha Ivers*, *Double Indemnity*, and *Touch of Evil*.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1996

Bradley Chisholm, Chairperson

THE SEMIOTIC CONSCIOUSNESS: VIRGINIA WOOLF, WILLIAM FAULKNER, AND JAMES JOYCE

Joseph Gregory Brister

Since the first examples of what has become known as the "stream of consciousness" novel began to appear, critics have tried to explicate, codify, and classify these texts. Focusing primarily on the thematic and narrative structure, the early criticism all but disregarded the most remarkable feature of these works: their experimental use of language and syntax to present the nonlinguistic.

The more recent critical work of Julia Kristeva, which couples the general science of semiotics with Lacanian psychoanalysis, offers a more comprehensive interpretation, an interpretation that is able to address both the textual and contextual elements of these "psychological" narratives. Kristeva's conception of "the semiotic" (*le semiotique*, as opposed to semiotics proper) is synonymous with the "pre-Oedipal," the "repressed," the "translinguistic"; it works at the same time within and against "the symbolic," the patriarchal order of social and syntactical constraints. This combinatorial system is apparent at the level of the sign itself, but it is as well a paradigm at work in the modern "stream of consciousness novel."

In *To the Lighthouse*, Virginia Woolf interrogates this binarism that underwrites language and culture. She juxtaposes the "masculine" realm of logic and science with the "feminine" realm of emotion and art in the attempt to work out a synthesis, an equanimity between the symbolic and the semiotic registers that is realized in the narrative stylistics' fusion of poetry and prose.

William Faulkner, in *The Sound and the Fury*, constructs a paradigm of the movement toward language, toward the ordering of the symbolic from the speechlessness of the semiotic. In both theme and structure, Faulkner's novel questions the very nature of signs and signification.

In *A Portrait of the Artist as a Young Man*, James Joyce delineates his own mythic process of rejecting the symbolic ordering of church and state for the aesthetic (the semiotic) while depicting subjectivity itself as a continual dialectic between these oppositional forces.

These "writerly" texts, despite how they have been made to render up coherent "meanings," are nevertheless concerned with deconstructing established modes of thinking and reading, with presenting language as a rhythmic, transverbal "stream" of semiotic consciousness.

APPROVED BY RESEARCH COMMITTEE: NOVEMBER 1997

Sharon Cogdill, Chairperson

A USAGE STUDY OF SUBJECT-VERB AGREEMENT

Susan Ausmus Engel

Three principles govern subject-verb agreement: grammatical concord, notional concord and the principle of proximity. Grammatical concord prescribes that the verb match its subject in number: *Each of you is going to be rich* is illustrative. Prescriptive grammar favors the notion of grammatical concord and prescribes lengthy rules and exceptions to memorize for "correct" usage. Notional concord, used mainly with British English, is agreement of the verb with its subject according to the *idea* of number: *The government have broken all their promises*. The proximity principle states simply that subject-verb should occur between the verb and the local noun: *Each of you are going to be rich* is illustrative. This study is most concerned with the interaction of prescriptive grammar and the proximity principle in subject-verb agreement.

This study was conducted through reviewing the literature and through a usage survey of subject-verb agreement. Students enrolled in the required English Composition I at St. Cloud State University (SCSU) took part in the survey. The survey was designed to determine percentages of students using prescriptive rules versus using the principle of proximity or other factors when making verb choices. The surveyed group has provided information leading to subject-verb agreement usage in the English language.

The literature and this study examine the following seven categories commonly associated with grammatical subject-verb agreement difficulties: (1) the occurrence of a prepositional phrase or subordinate clause between the subject and verb, (2) subjects joined by the coordinator and the use of *every* and *each* in a sentence, (3) compound subjects in a sentence joined by *either...or* and *neither...nor*, (4) sentences beginning with the introductory *there is* and *there are*, (5) relative pronouns taking verbs that agree with their antecedents, (6) the use of *none* and *all* before a prepositional phrase in a sentence, and (7) the use of *the number of* and *a number of* in a sentence. A review of the literature, combined with data collected from survey sentence items, shows, by category, usage preferences with regard to subject-verb agreement.

APPROVED BY RESEARCH COMMITTEE: AUGUST 1997
Suellen Rundquist, Chairperson

ABSTRACT STRATEGIES FOR NONNATIVE ENGLISH WRITERS PUBLISHING IN SCIENTIFIC AND TECHNICAL JOURNALS

Arlene K. Erickson

This study will determine what types of rhetoric editors of scientific and technical (S&T) journals find unacceptable and provide insight into how nonnative English writers need to write in order to get their works published in these journals. A review of the literature discusses how scientific writing in English is viewed--as universal vs culture bound. The literature also shows that different cultures use different rhetorical approaches in presenting their material. The cultures reviewed were: Chinese, Japanese, German, French, Finnish, and Polish. Yet, the research also shows that the way we are teaching other cultures in technical writing needs reassessment. For example, advisors are overburdened with the task of teaching nonnative speakers of English how to write technically. The technical writing experts recommend keeping it simple, brief, precise, and clear, but the advice remains unheeded by foreign students and their advisors. Journal writing is a regurgitation of the same complicated styles that have been used for the last 100 years. To determine how nonnative speakers are currently publishing successfully, 10 were interviewed for this study from various cultures: Korea, India, China, Ghana, and Thailand. Five were from the business area, and five were from the science and technology area. In addition, rejection letters from journal editors were obtained from four of the interviewees. Review comments from an international engineering journal were also collected for three writers residing in India, China, and Japan.

FINDINGS: None of the interviewees had ever taken a technical writing class. They attribute their success in publishing primarily to getting the assistance of native speakers and to modeling existing works. All interviewees said their articles were rejected for technical reasons, not due to any language or culture issues. However, when analyzing the comments on the four letters provided, language-related issues can be seen to make a difference, mainly in their techniques of persuasion and argumentation, which can differ widely across cultures. The Americans are very direct, and many other cultures are indirect, trying not to offend. The comments from the international engineering journal show that editors may be taking on a huge burden for doing massive rewrites to fit the material to the journal. The pedagogical implications are that higher educational institutions need to become more effective in teaching technical writing.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1996
James H. Robinson, Chairperson

LINGUISTICS AT THE SECONDARY LEVEL: A COURSE FOR HIGH SCHOOL STUDENTS

Robert Gardner

Linguistics is a subject that high school students find interesting; however, most high schools focus their language instruction on grammar and not the other fields of linguistics. Research indicates that the teaching of grammar does not always benefit students. The limited research relating to the teaching of other fields of linguistics at the high school level shows that linguistics can be an empowering subject for students.

A recommended emphasis for a high school linguistics course is sociolinguistics. Course objectives and course development should focus on a student-centered approach to sociolinguistics.

Extensive lesson plans detail activities for students and teaching strategies.

After one year of teaching the course at Apollo High School in St. Cloud, Minnesota, student and teacher response has been enthusiastic.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1996

Suellen Rundquist, Chairperson

SPIRITUALITY AND ECOLOGICAL AWARENESS: AN ECOFEMINIST EXPLORATION OF KATHLEEN NORRIS' *DAKOTA: A SPIRITUAL GEOGRAPHY* AND LINDA HOGAN'S *DWELLINGS: A SPIRITUAL HISTORY OF THE LIVING WORLD*

Heidi R. Gomez

The following study explores the themes of a spirituality grounded in ecological awareness as represented in Kathleen Norris' *Dakota* and Linda Hogan's *Dwellings*. In these works, the authors discuss spiritual heritage and what it means to define oneself in a spiritual relationship to nonhuman nature. Norris and Hogan come to understand themselves within their own traditions, Norris from the Christian Protestant faith and Hogan from her Native American heritage. This study illuminates the integration of eccentric values into traditions of spirituality, including an explication of how the spirituality revealed in the works on Norris and Hogan can be understood to be ecofeminist in orientation.

The works of Norris and Hogan exemplify the efforts of ecofeminist spirituality to integrate religious belief and ecological awareness. These authors demonstrate alternative spiritualities which emphasize the interconnectedness, interdependence, and sacredness of nature. Their spiritual orientations offer a perspective of humans as a part of the natural world, rather than outside or above nonhuman nature. An exploration of the spiritual themes in the works of Norris and Hogan reveals their efforts to re-imagine and reassert an earth-based spirituality and promote these values in their writing.

APPROVED BY RESEARCH COMMITTEE: AUGUST 1997

Suzanne Ross, Chairperson

GENDER DIFFERENCES IN GROUP DISCUSSION DYNAMICS IN THE ESL CLASSROOM

Ewa M. Grave

The purpose of this study is to examine gender differences in group discussion dynamics in the ESL classrooms. ESL classrooms are silent. If someone talks it is the instructor. Small group discussion has been known to allow ESL learners equitable access to the kinds of social interaction shown to be necessary for learning. Small group discussions afford different participation structures than the one at a time talk of the whole class. However, it has been my observation that small group discussions are a novelty for most Asian students and instead of putting them more at ease put them in the spotlight, the situation in which they can no longer hide. The reasons for discomfort are many: Japanese students who constitute the majority of Asian students mentioned here are simply not used to expressing their opinions, more so if their opinions were to contradict someone else's statement. Japanese culture evolves around avoidance of conflict; therefore any confrontation is omitted. Some students come from societies where women do not speak out and do not argue with men's opinions and if they do they are looked down upon. Unfortunately this cultural assumption that quiet is feminine remains quite universal. It is my understanding that ESL Asian female students become more outspoken in their content classes where no one from their own culture bears witness to their liberation, while in the ESL courses, Asian women remain soft-spoken, if spoken, continuing to play their social roles as long as they are in the presence of the people from their country. ESL students transfer their communication dynamics into their American ESL classrooms.

In order to investigate culture's impact on communication dynamics between genders, a review of literature was completed. To gather data for this study, 40 ESL college students were given a questionnaire which examined their attitudes towards participation, interruptions, and gender relations within one course: ESL Listening and Speaking. The same students were also observed in mixed-sex group discussion for the use of conversational devices, like: interruption, agreement, disagreement, sentence endings, and discussion leading expressions.

As predicted, ESL males students dominated the group discussion. However, contrary to the predictions, women interrupted others as much as men did. In conclusion, because of different cultural communication patterns, group discussions in ESL classrooms need further guidance.

APPROVED BY RESEARCH COMMITTEE: MAY 1998
Suellen Rundquist, Chairperson

THE SATANIC VERSUS REVISITED: A FEMINIST PERSPECTIVE

Janet Marie Hagen

In *The Satanic Versus* Rushdie confronts the difficulties the people of diaspora face developing new identities in postcolonial world in the interstices between the East and West, specifically India and England. To counter rigid ideologies intrinsic to political and religious institutions, Rushdie uses satire and magic realism to create new ways of seeing the world, thus celebrating hybridity and inventing a new space for the migrant/colonized in the center.

Within Rushdie's paradigm of celebrating hybridity, from a feminist viewpoint the question becomes, What type of roles are the women assigned? This thesis attempts to understand and explain the voices that Rushdie gives the women. To avoid cultural reductionism, the women's positions represented by cultural values are taken into consideration.

One of the central concerns that drives the plot is the issue of nationalism. Focusing on Indian women, Rushdie positions their bodies as signifiers representative of national concerns. To analyze the message their bodies transmit, I apply Michel Foucault's theory on the role of the body in power and politics conjoined with various feminist and postcolonial theories. As a site for testing out modernity, Rushdie, in many instances, liberates women.

From a religious perspective, rewriting Islam's history feminizing it, Rushdie encourage a re-envisioning of women's roles customarily defined by rigid orthodoxy. In other depictions, Rushdie slips back into writing from a patriarchal position that stereotypes women.

To further access the voices Rushdie gives women, I have examined their positioning based on Edward Said's Orientalism. Even though Rushdie's native home is India, having been educated in England he falls into writing from an Occidental stance, where the women are often typecast into Orientalist cliches submerged under Western hegemony.

Throughout the novel, because of the polemics concerning the religious sections, the values that are attributed to the women depend on the audience's perspective: Westerners are concerned with liberal causes; Easterners, with spirituality.

From a liberal perspective, Eastern women are delegated more liberated poses than tradition dictates. From an eastern conservative viewpoint, women's voices challenge traditionalism, seen as threatening to the family and national unity. Overall, Rushdie, for the most part, does not liberate the women. Overly sexualized within the context of the male narrative, the women lack the voices they need to be released from patriarchal confines.

APPROVED BY RESEARCH COMMITTEE: AUGUST 1997

Sidney Parham, Chairperson

PEOPLE ALWAYS CLAP FOR THE WRONG THINGS: A COMPARATIVE ANALYSIS OF EXISTENTIALIST THEMES IN SALINGER'S THE CATCHER IN THE RYE AND CAMUS' THE STRANGER

Holly J. Hassel

Existentialist thought had a major impact on both European and American contemporary literature. This thesis examines the themes of despair, absurdity, alienation, authenticity, and death and the search for meaning as they appear in two novels, The Catcher in the Rye by J.D. Salinger and The Stranger by Albert Camus reveals this influence.

Despair plays a key role in the plot and character development of each of these novels. Each protagonist suffers greatly in his respective experiences, Holden through his inner struggle with the absurdity of life and of his personal situation, and Meursault in his acute awareness of the crime he has committed and the ramifications which will result.

The absurdity of life and of the human condition sets the stage for the development of the characters and the various emotions. The conflict between the human desire for unity and coherence and the impossibility of such unity and coherence result in life's absurdity.

Each character experiences this absurdity. Because of the characters' focus on life's absurdity and on his own personal suffering, each exhibits a distinct sense of alienation from those who surround him. Holden cannot seem to connect with anyone intimately, from his family to his girlfriends to his friends. Similarly, Meursault demonstrates detachment from all those in his life.

Inauthenticity and the freedom to be authentic permeate each of the novels. As each character struggles with his own identity and actions, so he also examines those of the people with whom he interacts. Both Meursault and Caulfield gauge the behavior of others according to their own standards of authenticity.

Finally, death and the search for meaning, two integral components of existentialist philosophy, plague the main characters of the novels. Each grapples with the concept of his own nonexistence and attempts to create a meaning for his own life while still accepting and acknowledging the inevitability of death.

The rise and prevalence of existentialism in the works of fiction across two continents indicates a need to be filled. Growing despair, alienation, fear of death, and the search for meaning in the lives of today's population explains the popularity of these novels as well as the necessity of placing the characters and setting within an existential framework. The characters of these novels are people with whom the average reader can identify.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Sid Parham, Chairperson

ST. CLOUD STATE UNIVERSITY'S ESL WRITING: TESTING AND COURSES

Randa Jean Holewa

It is necessary for every program to periodically review testing, placement, and courses offered to students. This research revolves around the questions of whether St. Cloud State University's ESL program is providing students with an adequate background in writing and whether the direct test of writing used to place students into ESL writing courses is accurately determining test outs.

PROCEDURE:

This study began by reviewing literature related to testing, scoring, and placement to determine what the commonly accepted procedures are in ESL academics. The literature suggests that the standardized tests for ESL proficiency (TOEFL and MELAB) are used to judge admissions but are not specific enough to determine placement in remedial courses. Most universities offer their own direct tests of writing, which they administer and score on-campus. The literature also affirms the necessity of providing placement tests and remedial courses. This literature review was followed by an in-depth review of St. Cloud State University's testing, scoring, and courses. This review serves as a comparison to the commonly accepted procedures, which St. Cloud State University follows closely, and elaborates on the differences between freshman composition and ESL writing courses offered at the university. This review also serves as background for the statistical research, which involves the comparison of freshman composition grades between ESL students who have taken the ESL writing courses and ESL students who have tested out of the ESL writing courses to determine whether students are receiving an adequate background in writing from the ESL writing courses.

FINDINGS:

A t-test revealed a significance level of $p = .923$. Since $p = 1.0$ would mean that there is no difference between scores from groups of students, this suggests that the courses are adequately preparing students for freshman composition and the tests are adequately determining test out for students who do not require further ESL writing courses.

APPROVED BY RESEARCH COMMITTEE: AUGUST 1997

James H. Robinson, Chairperson

THE STUDY OF TELEVISION RHETORIC IN THE COMPOSITION CLASSROOM

Patricia A. Klug

Present-day composition courses exclude the study of discourses outside of writing. However, learning how to write well includes learning how to be literate in several discourses, including television. Students of the late twentieth-century spend much of their time watching television, but have not learned how to think critically about what they are watching. By studying rhetoric, specifically the rhetoric of television news, students would be able to become not only better writers, but also literate citizens. The goals of educating literate citizens require that instructors recognize the major discourse of our time, television, and teach students how to analyze that discourse.

Educating students to be "critically, powerfully, and politically literate citizens" (Apple 193) requires that instructors address the multiple discourses that students encounter in their daily lives. Viewing television critically is a skill that can be learned in the composition classroom along with reading and writing when we address the major component of all these skills, critical thinking. The study of rhetoric draws connections between all of the discourses, and allows students to find those connections. Once those connections are drawn, students can begin to analyze how rhetoric affects them in their daily lives.

One of the similarities between television news and student writing is the value placed on the concrete and specific. The concrete and specific manifests itself in television in the visual image. Visual images in television news

reduce complex concepts into simple ones. Issues that may contain various perspectives are reduced to an image that allows for only one interpretation of the issue. In student writing, when composition instructors teach the value of the concrete and the specific, they encourage students to “dumb down” their writing. By emphasizing clarity through the style of the concrete and specific, the students’ writing lacks depth or engagement of complex concepts that are vital to good writing.

In this thesis, I not only argue for the integration of the study of television rhetoric in the classroom, I also use my own rhetorical analysis of television for the basis of a composition course. The composition course I have designed addresses the need to teach the value of amplification through analyzing the rhetoric of television. Students in the course will learn how to critically think about the TV they watch, and they will draw connections between the failings of TV news rhetoric and their own writing. By learning this skill of critical thinking, they can move towards the goal of becoming better writers.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1996

David Sebberson, Chairperson

A RHETORICAL ANALYSIS OF THE SPEECHES OF ELLISON’S INVISIBLE MAN BASED ON KENNETH BURKE’S CONCEPTS OF FORM AND IDENTIFICATION

Nike S. Lawal

This study is a rhetorical analysis of the speeches of Ellison’s Invisible Man using Burke’s concepts of form and identification. This analysis, carried out at three levels--use of form, use of identification strategies, and use of African American discourse form (call-and-response), reveals a close correspondence between form and content: The first speech shows the narrator as a timid and subservient and afraid to speak against the white establishment; in the second speech, the narrator’s fear of the establishment is gone but he is still dependent on others for what he should do or think; in the third speech he begins to affirm himself and to show less reliance on the audience and the Brotherhood for ideas and approval; by the time he makes his last speech, he has turned completely against the system and is no longer afraid to speak his mind. This movement from lack of assertiveness to assertiveness, from dependency to independence, is conveyed through the metaphoric use of strategies of identification, call-and-response and form.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Donna Gorrell, Chairperson

THE DRAMATIC PRINCIPLE

Nathalie M. Lewis

Humans have always been slaves of their roles in the desire-ridden stage called life. My philosophy of composition, like that of Jim W. Corder, is that argument “is what we are.” In a mysterious way, everyone is an argument because each person has a unique belief system, ethnicity, socioeconomic class, education, and so on, that determines the various roles one plays out in life. More than ever today, the modern individual is in need of a rhetoric that understands that writing is a rehearsal for life, a preparation for the history that lies ahead of us. Stanislavski, Aristotle, Burke, and Ong are key figures that come closest to this dramatic understanding of human nature. To what extent does role-play help composition students in seeing argument is the diversity of what they are? Does role-play assist students in developing a diverse argument based on multilevels of meaning? I believe that the features of role-play such as role, dialogue, conflict, magic if, objective, and audience are all qualities that assist students in rehearsing the real life argument that is diverse, cryptic, and speculative.

In order to study the effects of role-play on college composition, I will focus on the results of three role-plays, their surveys, class discussion, along with an analysis of sample essays. I believe that in the arena of role-play and composition, structure is the most important element in helping students make the transition from stage to page.

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Rex Veeder, Chairperson

AN EPIDEICTIC UNDERSTANDING OF STUDENT COMPOSITION

Kirk J. Mann

Rhetorical theorists continue to revisit the concept of epideictic rhetoric to reevaluate and broaden its definition, functions and applications. No longer contained to ceremonial events or helped to a specific ornamental style, epideictic can be seen operating in discourse situations not traditionally associated with the genre. This thesis will trace the reconceptualization of epideictic, beginning with Aristotle's's designation, and then studying the genre's significance within certain key historical periods. The intent of this historical overview is to reveal epideictic as the inherent praise and blame within language that reflects the values that the speaker and/or the speaker's audience intend to maintain for a given purpose.

Using this reconceptualized notion of epideictic, I will proffer the theory that many student writers rely on a base form of the genre when composing academic essays. With the results of a writing survey conducted at St. Cloud State University, this study will demonstrate how student writers often echo the values of their instructors in their own writing in an attempt to secure a safe grade. In addition, many of these students feel compelled to follow rigid notions of "proper" academic style and structure. Through these compositional practices, students are engaging in a classic epideictic technique. They submit to the interpreted demands of their audience in an attempt to establish an amicable relationship because in the balance lies their grade. Thus, I contend that students are often more concerned with formally pandering their audience than with offering critical insight on a topic through their own unique ethos.

APPROVED BY RESEARCH COMMITTEE, MAY 1998
Rex Veeder, Chairperson

THE USE OF TAPED STORIES TO TEACH ENDING -S SOUNDS TO ESL STUDENTS

Julia F. Malone

Students learning English as a Second Language (ESL) often experience difficulty learning ending sounds including -s sound. This study examines three types of -s sounds commonly problematic to Southeast Asian students at the elementary level: the inflected endings of third person singular, possessive, and plural are highlighted and examined in two ways, orally and in writing.

The oral element is done by having students read a short story into a tape recorder. The percentage of correct-s is documented. The written portion of the study involves random selection of student dialogue journal entries. Again the portion of correct -s sounds is recorded after analysis.

With students divided into a control group and an experimental group, before and after samples of both elements (written and oral) are taken with a consciousness-raising (C-R) task administered for the experimental group. This C-R task involves raising consciousness of the grammar point being tested. This is done by having students circle the ending sounds in a number of texts while listening to a short story on tape.

Results conclude that students in both groups improve usage of ending -s sounds after activities, although only the experimental group had C-R activities. This study suggests that the students' own natural acquisition process plays an important part in the language learning process of Southeast Asian students ages 9-12 regardless of teaching tasks.

APPROVED BY RESEARCH COMMITTEE, FEBRUARY 1998

Suellen Rundquist, Chairperson

INTERNATIONAL STUDENT PROBLEMS IN GENERAL EDUCATION COURSES

Rodney W. Pederson

International students encounter a variety of problems in adjusting to life in an American institution of higher learning. As the pursuit of a university degree requires an accumulation of academic knowledge and knowledge of specific institutional culture, statistical analyses alone are insufficient in determining the underlying causes for the lack of success exhibited by international students in general education courses. In addition to the two types of knowledge required of any university student, the international student must also have the language skills requisite for academic success. This research revolves around the questions of whether, and to what extent, this lack of success is attributable to insufficient academic, language, or cultural skills, and what research methods can adequately describe the causes of this phenomena.

This study utilizes three research methods in determining the causes for the lack of success by international students in general education courses. First, a statistical analysis of students grades in select general education courses was conducted. The groups under study were American students, international students who had not taken an ESL Reading course, and international students who had taken an ESL reading course. The rationale for this research was to identify the parameters of institutional assessment for each of the groups in question. Second, Think Aloud Protocols were conducted on the students of four separate ESL Reading classes. The rationale for this research method was to gather data both statistical and ethnographic in nature which would provide a more precise estimate of international student reading competencies. Third, four separate ethnographies of international students were conducted in order to determine the extent to which culture affects international student academic performance.

The data generated in this study indicated that although international students do exhibit a degree of insufficient academic English reading competency, the primary factors influencing international students lack of success in the courses selected for study are culture and the nature of specific course requirements. Specifically, international students exhibit an unwillingness to conform to the American academic norms of class participation and have English compositional abilities insufficient to the requirements of the Business Department. In addition, as the data supports a conclusion that cognitive English reading competencies are not the primary factor in the lack of international student achievement, it must be concluded that the SCSU ESL Reading program is successful in raising the reading competencies of international students to levels commensurate with university requirements.

APPROVED BY RESEARCH COMMITTEE, MAY 1998

James H. Robinson, Chairperson

THE ACQUISITION OF SIMPLE PAST TENSE THROUGH TEACHER MODELING IN DIALOGUE JOURNALS

Lynda L. Shoff de Gonzalez

This thesis proposes the use of dialogue journals as a method to help students with limited English become more proficient writers by acquiring and using the simple past tense correctly within their writing. A review of the literature reveals the importance of using dialogue journals in an ESL and/or regular classroom setting. The first section addresses the development of dialogue journals. The second section discusses: a) student benefits, b) teacher benefits, c) suggestions for using dialogue journals, d) dialogue journal features, e) study results, f) development of writing, and g) implementation of dialogue journals into a classroom. The last section explains the significance of teacher modeling and teacher response in dialogue journals.

The purpose of this study is to investigate the effectiveness of using teacher modeling in dialogue journals to teach the usage of a specific linguistic element, simple past tense, in an ESL elementary classroom setting. The study analyzes dialogue journal responses made by nine elementary ESL students and documents the number of occurrences of simple past tense, as well as the number of correct occurrences of simple past tense per entry within their dialogue journal entries.

The analysis discloses the following: an increase in the length of student entries, more uses of the simple past tense and more incorrect occurrences of simple past tense. The findings from this study indicate to the researcher the importance of using dialogue journals within a classroom to help limited English students acquire the skills they need to become more proficient writers.

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Suellen Rundquist, Chairperson

DISCOURSE THEORY FOR A POSTMODERN ENVIRONMENT: REHABILITATING THE EPIDEICTIC GENRE

William G. Spath

This thesis will reassert rhetoric's role as epistemic by examining specifically the epideictic genre and its role in a postmodern environment. Postmodernism, by definition, denotes a fragmented socio-political landscape where numerous heterogeneous discourse communities reside. I will explore in this thesis epideictic discourse's ability to bridge the borders between these diverse communities and develop criteria for evaluating the effectiveness of the genre in accomplishing the action of communicating and interrelating the values of these unique discourse groups. By examining examples of marginalized community's epideictic discourse and analyzing the discourse in terms of enthymematic content this thesis will attempt to discover a methodology for communicating values between marginalized and dominant discourse groups. I will attempt to draw conclusion concerning the efficacy of the epideictic genre in acting as agent for this communicative action by applying Jurgen Habermas's theory of locutionary validity claims.

APPROVED BY RESEARCH COMMITTEE: AUGUST 1997

Rex Veeder, Chairperson

MOVING THE CENTRE CONFRONTS SOUTHERN AFRICA: THE IMPLICATIONS OF EMPLOYING THE WORK OF NGUGI WA THIONG'O TO EXPLICATE THE TEXTS OF BESSIE HEAD

Patricia Taylor

One of the shortcomings of much of twentieth century literary criticism is that it contents itself with finding the meaning in given text, ignoring the text's worth in terms of its social function. Such a practice is particularly dangerous when the text at hand is from a non-European culture. Since the field of literature is governed largely by a Western body of academics, looking for "meaning" in a non-Western text is often a fruitless endeavor: "meaning" itself is limited to the Eurocentric boundaries we, Western academics, have placed on meaning. Furthermore, one of the overwhelming problems in terms of "teaching" non-European literature is that students are often not given appropriate, accessible tools for reading this literature.

In lieu of the present state of affairs, it seems necessary to approach non-Western texts in a more enlightened way. What this study proposes is a way of reading texts, a strategy for explication, that is much more equitable and functional than previous methods. Specifically, the non-fiction work of Kenyan writer Ngugi wa Thiong'o meets this demand.

Ngugi's text, *Moving the Centre: The Struggle for Cultural Freedoms*, offers a world view that seems suitable as an approach to literature. Ngugi's program is predicated on the idea of "centre," the corpus of values and ideologies that is embraced by members of a particular culture or sub-culture. Ngugi suggests that "within nearly all nations today the centre is located in the dominant social stratum" (Ngugi xvii). This center frequently attempts to impose its various viewpoints onto the other, often subordinate, centers. What Ngugi calls for, then, is a movement, a shifting, of centers, not in order to study that which is removed from ourselves, but rather in order to "understand the voices coming from what is essentially a plurality of centres all over the world" (11).

It seems only logical to incorporate this line of thinking into the classroom. Specifically, I propose the implementation of Ngugi's ideas regarding "moving the centre" as a means for explicating literature. Students who operate under this theory will study texts in terms of how the criteria for "moving the centre" has been fulfilled or has failed to be met.

In order to illustrate the efficacy of Ngugi's ideas as a way to explicate texts, I have chosen to use the works of African writer, Bessie Head. This is not an arbitrary decision, however. Head, who has not received ample representation in classrooms and on reading lists, struggled throughout her life with her own identity, with the notion of understanding her "centre." For these reasons, she is an appropriate subject for this study.

The intention was not only to expose readers to Bessie Head, and to increase their understanding of that writer and her work, but to illustrate the need to implement approaches to literature that will deter students from focusing only on the differences between their own experiences and what is present in the text in question. The use of Ngugi's polemic will satisfy these goals.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Sidney Parham, Chairperson

QUEST FOR AUTHORITY: AN ANALYSIS OF THE INTRUSIVE AUTHOR IN UNCLE TOM'S CABIN AND THE SCARLET LETTER

Irene Voth

Both Nathaniel Hawthorne and Harriet Beecher Stowe engaged in a quest for authority by using the third person omniscient point of view with its intrusive author convention in their respective masterpieces, *The Scarlet Letter* and *Uncle Tom's Cabin*. Similarities in these authors' backgrounds and in the circumstances and influences prevailing at the time may have precipitated their engagement of this strategy in nearly identical ways and for identical purposes. However, while Hawthorne's use of the strategy has been mostly ignored but sometimes praised as *The Scarlet*

Letter became and remains one of American literature's canonical works, Stowe's use has precipitated harsh criticism. Yet, the influence of Uncle Tom's Cabin along with its enduring appeal suggests that Stowe's quest for authority was more successful than Hawthorne's, at least with the popular audience. This and the uneven application of critical criteria in regard to these two novels may indicate a bias in the formulation of America's literary canon.

APPROVED BY RESEARCH COMMITTEE, MAY 1996

Judy Foster, Chairperson

POSITIONALITY: REEVALUATING NATURALIST WRITING

Emily D. Wicktor

While it is clear that the fundamental goal of the feminist movement is the abolishment of sexual oppression of women, feminists do not agree as to how this goal is best accomplished. In an effort to provide a solution, anthropologist Sherry B. Ortner asserts that the removal of women from their "closer to nature" status and into the "male world of culture" is the answer to the problem. Her inclusion of nature in the debate helped develop an ecological feminist (ecofeminist) approach which recognizes that the oppression of women is inextricably linked to the oppression of nature and that the struggle toward liberation must include both.

However, disagreements within the feminist movement carry over into the ecofeminist movement, and feminists continue to debate whether the connection between women to nature is emancipator (essentialism) or if this connection further subjugates women (social constructionism), leaving feminists to wonder if there is a place between these two stances where a peculiarly female experience of nature is located.

Through an analysis of both the essentialist and social constructionist perspectives, Linda Alcoff finds that neither stance offers the possibility for real change. She suggests the concept of positionality as an "alternative third course" for feminism. In addition to allowing women to strategically constrict their own meaning, positionality allows women to take up a position within their changing social, cultural, and physical surroundings, while simultaneously recognizing the fluidity of these factors comprising their contextual circumstances.

Consequently, in an effort to fully comprehend the apparent essentialism presented in the works of writers linking women to the natural world, Linda Fuss asserts that an understanding of women's motivations must be known before drawing negative conclusions. Through the application of Alcoff's concept of positionality, the motivations for the apparent essentialism of Terry Tempest Williams' *Refuge* and Leslie Marmon Silko's *Storyteller* become evident.

APPROVED BY RESEARCH COMMITTEE: AUGUST 1997

Suzanne Ross, Chairperson

CONTRASTIVE RHETORIC: A COMPARISON OF CHINESE AND ENGLISH EXPOSITORY WRITING

Wu Baiying

The awareness about differences in text characteristics and readers' expectations across cultures is believed to be essential in both ESL (English as a second language) and EFL (English as a foreign language) composition teaching. Students of English as a second language enrolled in a college composition course in the U.S. often come from cultures that use different rhetorical strategies. ESL instructors need to understand the differences and similarities in rhetorical structures across cultures and guide their students to develop skills of academic writing to meet English-speaking readers' expectations. On the other hand, EFL teachers around the world need a knowledge to contrastive rhetoric between English and the students' native language to make their students aware of cross-cultural differences in writing style and can help their students learn the expectations of an English language audience.

Researchers in the field of contrastive rhetoric have focused on analyses of written discourse across cultures

since Robert Kaplan's pioneer article of 1966. Many contrastive rhetoric studies have been conducted between English and Chinese in relation to directness and indirectness. However, a great deal of controversy still remains. These factors, therefore, point to a need for further study to provide information about the rhetorical contrast between English and Chinese.

By means of analyzing students' L1 and L2 essays written by Chinese and English native speakers, this study discusses the characteristics of Chinese students' L1 expository writing and at the same time it examines to what extent Chinese students transfer their L1 strategies to their L2 writing. By comparing students' L1 essays, this study also examines the differences and similarities between Chinese and American students' expository writing to determine what is the cause of problems Chinese students encounter when they write in English.

The data analyses of this study focus on directness and indirectness in terms of organizational structures, paragraphs development, types of reasoning, rhetorical patterns, references to sources and cohesion.

The results of analyses conclude that Chinese expository written texts have both direct and indirect rhetorical patterns. Overall, students in this study used a similar rhetorical structure in their L1 and L2 essays. There are both differences and similarities in the rhetorical style between the Chinese and American students' expository writing in terms of directness and indirectness. The evidence shows the organizational structures in Chinese and American students' essays are similar, however, significant differences in the content of introductions and conclusions were found between English and Chinese L1 essays. Moreover, noticeable differences were also evident in the paragraph development and the use of cohesive devices.

The study suggests that the organizational structure from another culture may look similar to the English pattern, however, there can be many differences in small aspects. Contrastive rhetoric can empower the non-native English-speaking writers to reach the upper levels of writing in English and can also help ESL and EFL instructors develop appropriate pedagogical strategies for the teaching of composition.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

James H. Robinson, Chairperson

SPORTS MANAGEMENT

PERCEPTIONS OF NCAA DIVISION I BASKETBALL HEAD COACHES REGARDING STIPENDS FOR STUDENT ATHLETES

Erich J. Bacher

The purpose of this study was to determine the perception of selected NCAA Division I basketball head coaches, when asked if student athletes who are on full-scholarship should be paid an additional stipend.

The population for the study was comprised of 69 male and female head coaches from the following conferences: Big Ten, Atlantic Coast, Pacific 10, Southeastern, and Big East.

In the statistical analysis, comparisons were made in three steps. Part one of the analysis focused on the yes or no response to the main question of the study, "Do you think NCAA Division I student-athletes, who are on full scholarship, should be paid an additional stipend?" Part two of the analysis focused on the yes or no response of men's (group 2) and women's (group 3) head coaches in regards to the main question of the study. The third part of the analysis focused on the yes and no responses of head coaches from public (group 4) and private (group 5) institutions in regards to the main question of the study.

Using a Chi-square test, data revealed no significant difference in the number of head coaches (group 1) that support payment and head coaches that do not support payment to student-athletes at the Division I level. This author did find a significant difference between the views of men's (group 2) and women's (group 3) in regards to payment. Men's basketball coaches support an additional stipend, while women's basketball coaches are against an additional stipend. Finally, this author found no significant difference between the views of head coaches at public (group 4) and private institutions (group 5).

It was recommended that this study provides a tend to support payment to student athletes which would suggest further study on "pay to play" is warranted.

APPROVED BY RESEARCH COMMITTEE, MAY 1996
Robert Waxlax, Chairperson

THE EFFECTS OF MENTOR PROGRAMS AND ATHLETIC HANDBOOKS ON GRADUATE ASSISTANTS AND NEW COACHES IN AN ATHLETIC DEPARTMENT

Matthew G. McGregor

The first phase of this study attempted to determine if mentor programs, orientation programs, and handbooks for graduate assistants and new coaches would be beneficial for a univeristy and its athletic department. The second purpose was designed to create a mentor program, orientation program, and handbook.

The population for the study was comprised of 110 coaches from college and some high schools across the United States.

Statistical analyses were made across three comparisons. Part One of the analysis focused on the demographic data of the survey. Part Two focused on the mentor programs and asked the subjects if they had participated in a mentor program and orientation program. The survey also asked subjects if a mentor program and orientation program would be beneficial for graduate assistants and new coaches in an athletic department. Part Three asked respondents what items should be included within an athletic department handbook, mentor programs, and orientation programs.

Using standard deviation, mean, and percentages, the data revealed that there was significant support for a mentor program, for an orientation program, and for a handbook for an athletic department. The researcher found that a majority of subjects said that they had not participated in a mentor program and many wished that they could have. As a result of these survey results and comments, the researcher believes that a mentor program, orientation program, and handbook for graduate assistants and new coaches would be beneficial to SCSU and its athletic department.

APPROVED BY RESEARCH COMMITTEE, MAY 1998
Robert Waxlax, Chairperson

COMMUNICATION MANAGEMENT

THE DIRECTOR'S ROLE IN CREATING AND MANAGING AN EXCELLENT PUBLIC RELATIONS DEPARTMENT

Loretta Bronson

HYPOTHESIS

This research project, based on Grunig's Integrative Theory of Public Relations, attempted to determine if a public relations department directed by someone trained in business management techniques is more likely to be *perceived* an excellent department by other public relations professionals. Also, it set out to compare the practices of "excellent" department directors to those of general public relations directors.

PROCEDURE

Surveys were mailed to the public relations directors of the largest 104 corporations in Minnesota. They

were asked to list the characteristics they felt were needed for a public relations department to be considered excellent, to identify three excellent departments, and to complete demographic data, including their public relations and business education and training, their ability to influence corporate decisions, and their use of four PR models. Ten departments *perceived* as excellent were identified from the survey material. Their directors were interviewed and were asked the same questions as the general population and to explain their employee management and motivation techniques.

CONCLUSIONS

The following conclusions were drawn from the data gathered:

1. Public relations directors with training in business management techniques are slightly more likely to be perceived by other professionals as managing an excellent department, but additional research clarifying the definition of "training" is needed.
2. Excellent department directors are more likely to practice excellent public relations as defined by research:
 - a. They are 2 ½ times more likely to have advanced degrees in communications or marketing.
 - b. They are more likely to be a member of their organizations' dominant coalition.
 - c. They are twice as likely to practice ethical, a symmetrical communications with external audiences and also practice ethical, symmetrical communications with their employees.
3. Excellent department directors view access to senior management, strategies, pro-active planning, writing and PR skills, and knowledge of the business as keys to an excellent department.

APPROVED BY RESEARCH COMMITTEE: NOVEMBER 1997

Marjorie Fish, Chairperson

NORMATIVE STUDY OF ORAL VOLITIONAL MOVEMENTS OF FIVE-YEAR OLD CHILDREN ELICITED UNDER TWO STIMULUS CONDITIONS

Christine M. Fletcher

An examination of a child's ability to perform non-speech oral volitional movements has become part of the standard protocol for diagnosing motor speech disorders. Common methods used for determining this ability have included isolated and sequential oral volitional movements elicited by a verbal command and/or a demonstrating. Little normative data on children exist, however, to support the methods employed.

The purpose of the present investigation was to collect normative data from 5 year old children on the performance of oral volitional movements. Both isolated and sequential movements were assessed under two elicitation conditions; explicit verbal command and demonstration. Twenty boys and 20 girls served as subjects for this study.

The result indicated that all subjects received higher scores for performance of movements elicited under the demonstration condition than those elicited under the explicit verbal command condition. Subjects also received higher scores for performances of isolated movements than for sequential movements. No difference in performance was found between male and female subjects. A general trend of higher mean scores per item was found for performances of older subjects (5 years, 6 months to 5 years, 11 months when compared to the performances of younger subjects (5 years, 0 months to 5 years, 5 months). Statistically significant differences between the groups were also found for performances of isolated movements under the explicit verbal command condition.

An analysis of the test indicated that some items may need to be revised or eliminated from the test protocol due to their apparent difficulty for 5-year-old subjects. Sequential items in particular appear to be inappropriate for the assessment of young children.

The results of this study are discussed with reference to their applicability to the use of oral volitional movements in the diagnosis of motor speech disorders in children.

APPROVED BY RESEARCH COMMITTEE, MAY 1998

Gerald La Voi, Chairperson

MISSING THE MISSION AND PURPOSE OF PUBLIC BROADCASTING: THE STATE OF CONTEXTUAL TRAINING IN PUBLIC RADIO

Anthony J. Hunt

PROBLEM:

The thesis maintains that public and private media can coexist within our market economy in a symbiotic system in which the commercial sector caters to mass interests and concentrates the capital necessary for technological expansion, while the public sector provides alternative perspectives and supplies the new energy required to support a vital democracy. A completely capitalistic media system poses a serious threat to the true democratic process, and this is the future we are facing. The best chance public broadcasting has is to renew its commitment to its ideal. The most powerful assets of public broadcasting are its employees and volunteers. One effective way to foster an impassioned and educated public broadcasting workforce is through better contextual training. My experience working with volunteers at a university radio station indicates that such training can have a dramatic effect on station membership and fundraising. If public broadcasting in the U.S. is to thrive, its employees and volunteers must have a firm commitment to its mission.

CONTENT:

A survey of an availability sample of professionals in public radio, through the listserv of the Public Radio Association of Development Officers (PRADO), revealed public radio stations provide little formalized training about the mission of public broadcasting. After giving the survey results in Chapter I, the thesis examines the elements that should be conveyed in contextual public broadcasting training. Chapter II briefly describes the historical context surrounding public broadcasting: the beginnings of radio, the rapid take-over by commercial interests, and the conflict between those interests and the early radio pioneers who fought to maintain a true public space on the airwaves. Chapter III provides theoretical tools for better understanding the situation of non-commercial media. Two theories are examined that highlight the need for non-commercial broadcasting to counterbalance market forces: the spiral of silence theory and agenda-setting theory. Analysis of these theories illustrates the damage a strictly commercial media monopoly can cause. Chapter IV describes how public broadcasting is losing its independence by gradually taking on more and more characteristics of commercial broadcasting. Chapter V describes the ideals behind public broadcasting, which has the responsibility to create a public sphere where information and opinions can circulate freely, without constraint from the marketplace or political agendas.

APPROVED BY RESEARCH COMMITTEE: MAY 1998

Majorie Fish, Chairperson

THE TREATMENT OF PUBLIC RELATIONS IN INTRODUCTORY MASS COMMUNICATIONS / JOURNALISM COURSES

Kevin J. Young

PROBLEM:

Public relations practitioners and educators are searching for ways to increase professionalism in the public relations industry. Education has been identified as a tool in that effort. A debate has developed recently about where the appropriate academic home for public relations is. One perceived problem with public relations' traditional placement with journalism in academia is a mistrust of public relations and its motives by journalists.

PROCEDURE:

Surveys were sent to introduction to mass communication / journalism instructors at seventy-two AEJMC accredited schools with public relations sequences. The surveys included attitude statements about public relations and questions about how the instructors treat public relations. Respondents were also asked to identify texts that they used in the course. The books identified the most were subjected to content analyses regarding public relations content.

FINDINGS:

Attitudes about public relations were found to be generally favorable. Those respondents that had taught public relations had more favorable attitudes than those who had not taught public relations on several statements. Almost 90 percent of respondents believed public relations and journalism belong together in the same academic unit.

The texts subjected to content analyses devote three times as many pages to public relations as those examined in a 1982 study. All of current texts have separate chapters devoted to public relations, compares to only one text in the 1982 study. The author of the 1982 study cited numerous examples of critical statements about public relations. The current texts acknowledge the image problems of public relations, but they also offer interpretations about the cause of these problems and acknowledge the efforts of the public relations industry to address these problems.

CONCLUSION:

Based on the findings, the author concluded that the attitudes about public relations were generally positive by instructors questioned for the survey. The current text books devote more space to public relations and offer more interpretation about the problems facing public relations than texts of the past.

The skills used by journalists and public relations practitioners are very similar. Almost 20 percent of respondents indicated both journalism and public relations as best describing their professional background.

Writing skills, exposure to and familiarity with mass media and communication theory are all best addressed in mass communications / journalism departments. Based on the available information, the author concluded that public relations education is most appropriately placed in the same unit as journalism.

APPROVED BY RESEARCH COMMITTEE: MAY 1997

Amde Michael Habte, Chairperson

COLLEGE OF SCIENCE AND TECHNOLOGY

BIOLOGICAL SCIENCES

THE ECOLOGY OF THE AMERICAN BITTERN IN NORTHWEST MINNESOTA

Wayne L. Brininger, Jr.

From 1 May 1994 to 1 September 1996 field techniques were developed to capture American bitterns (*Botaurus lentiginosus* Rackett) in northwest Minnesota. These techniques included mirror traps, mist nets, dip nets, net guns, and night-lighting. Forty-five adults, including 28 males and 17 females, and 40 nestlings were captured. Males were captured during the breeding season using mirror traps or mist nets with a tape player broadcasting the "pumping" call of the male. Females were captured during the nesting period using mist nets or dip nets. Incubating females were captured with a dip net; however mist nets were required after the eggs hatched. Both sexes were captured during various stages of the molt using a dip net and an airboat. When captured, bitterns were measured, weighed, banded and radio-marked. Using radio telemetry, information was collected on local movements, home ranges, fidelity, mortality, and nest site characteristics. A technique was developed to distinguish the sex of adults based on measurements. Male weight averaged 906 g compared to 580 g for females. Males were larger in all other measurements taken. Mean home range was 415.4 ha for six males and 337.5 ha for two females. Mean distance between locations was 562 m and 614 m for males and females, respectively. Mortality for 24 radio-marked adult bitterns was 12.5%. Fidelity of 22 adult bitterns to the previous year's breeding area was 40.9%. No radio-marked fledglings returned. Twenty nests were found; ten in wetlands and ten in grasslands. Transects were established at each nest to determine the presence of plant species. Nest success was 50% in wetlands and 70% in grasslands. Forty young bitterns were produced from 15 nests. Fifteen of 24 (62.5%) radio-marked nestlings died prior to fledgling. Starvation was suspected to be the major cause of nestling mortality. Four of nine (44.4%) nestlings died after fledgling. Age of fledgling ranged from 37-43 days.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1996

Alfred H. Grewe, Jr., Chairperson

NESTING BEHAVIOR AND NEST SUCCESS OF SCARLET TANAGERS AT SHERBURNE NATIONAL WILDLIFE REFUGE

Jane M. Hartwig

A study of the nesting behavior and nest success of the Scarlet Tanager (*Piranga olivacea* Gmelin) was conducted at the Sherburne National Wildlife refuge in Sherburne County, Minnesota during 1995 and 1996. Nest site selection, incubation rhythms, length of incubation and nesting stages, brooding behavior, brood parasitism, and nest successes and productivity were investigated.

Male Tanagers arrived to the study area 17 May 1995 and 18 May 1996. Females arrived approximately one week later, 20 May in 1995 and 23 May 1996. Males established territories averaging 3.8 acres. Courtship activities began shortly after the females arrival.

Seventeen nests were located during the study, seven in 1995 and ten in 1996. All nests were in oak trees, fifteen in Red Oak, two in Bur Oak. Eighty-two percent of all nests were located within 100 feet of an edge. Forty-seven percent were located within 180 feet of a water source. The average nest tree height was 28.9 feet, with

an average dbh (diameter at breast height) of 9.6 inches. The average height of the nest was 19.9 feet. Sixty-seven percent of the nests were oriented South, Southeast, or Southwest.

Females began nest building approximately one week after their arrival to the study area. Nests consisted mostly of grasses and rootlets. Males accompanied females during nest gathering trips and sang incessantly during nest-building.

The average clutch size was 3.3 eggs in 1995 and 4.0 eggs in 1996. Females incubated for 12-13 days. Periods of attentiveness on the nest averaged 29.7 minutes, periods of inattentiveness averaged 7.9 minutes, with an average constancy of incubation of 75.8 %. An increase in temperature of degrees Fahrenheit decreased the period of inattentiveness by an average of 29.3 %.

Nestlings were brooded by the female for three to five days. Both adults fed the young, males more often than females. Caterpillars were the main food item for the first three days; dragonflies and other insects were then offered. Young were fed an average of 4.5 times an hour, with the number of feedings per hour increasing and the intervals between feedings decreasing as the chicks aged.

Tanager young fledged in nine to ten days. Adults continued to feed them for at least four weeks after fledgling. Three pairs attempted a second brood, building a new nest within two days of the fledgling of their first brood. One attempt was successful, producing one chick. The remaining two nests were predated approximately one week into incubation.

Fifty-three percent of all nests were successful; 70% were successful in 1995 and 40% in 1996. Successful nests produced 2.2 young per nest. Nest failures were attributed to cowbird parasitism and predation by avian and mammalian predators.

APPROVED BY RESEARCH COMMITTEE, DECEMBER 1996

Alfred H. Grewe, Jr., Chairperson

LAKE GEORGE WATER QUALITY EVALUATION AND MANAGEMENT OPTIONS

Valerie E. Hedin

In the 1800's, Lake George was a large body of water (about 40 acres, 0.16 km squared) with marsh vegetation on the shoreline. Over the years, it suffered dry periods and shrunk, providing an opportunity for shoreline and depth modification to develop a recreational site for a growing city. The initial shoreline length or circumference was 1.6 km (1 mile) in 1855, and today is 660 m (0.41 miles). Lake George is currently a small 29,200 m squared (7.2 acre) eutrophic urban lake centrally located in St. Cloud, MN. Drainage to the lake washes off 0.37 km squared (92 acres) of the 61% impervious residential/small business watershed runoff. Lake George, and the remaining 10% is diffuse local watershed runoff. Lake George has a maximum depth of 10 m (32.8 ft), mean depth of 5.4 m (17.6 ft) and is a dimictic drainage basin. Discharge from the lake empties into the city drain network to the receiving water, the Mississippi River.

Lake George is a eutrophic hard water lake displaying the following mean values for physical and chemical parameters in 1996: Secchi disk 2.5 m, total phosphorus 55 ug/L, algal chlorophyll-a biomass 8.8 ug/L, pH 7.2, conductivity 512 uS/cm, nitrate nitrogen 0.46 mg/L, and ammonium nitrogen 0.35 mg/L. The 1996 Trophic State Index (TSI) values were total phosphorus 65, chlorophyll-a biomass 50, and secchi disk 47 averaging 54 in the eutrophic range, but in previous years was higher.

Watershed total phosphorus (TP) runoff for 1992 was determined from grab samples to be 464 ug/L and was predicted to be 401 ug/L, very typical of urban watersheds using the appropriate in-lake TP prediction model. This model predicted watershed impact on Lake George for 1996, with in-lake TP data, as 137 ug/L, 35% less than 1992. This variability is typical for urban systems driven by rainfall and runoff, and accounted for the low TSI in 1996. In-lake TP that controls algal blooms was low in 1996, 67 ug/L in 1993. TP values over 50 ug/L are indicative of advanced eutrophication.

Recommendations for Lake George management include: 1) frequent watershed street sweeping and vacuuming, starting just after snow melt in spring, 2) distributing educational letters to watershed residents on litter

and fertilizer management, 3) alum flocculation of the lake to contain past nutrients, and 4) install a detention pond to intercept storm runoff, for water treatment before it enters the lake.

APPROVED BY RESEARCH COMMITTEE: APRIL 1998

Keith Knutson, Chairperson

BENTHIC DIATOM COMMUNITY BIOMONITORING DATA BASE AND PROTOCOL RECOMMENDATIONS, UPPER HEADWATERS, MISSISSIPPI RIVER, MINNESOTA

Nathaniel A. Hemstad

The benthic algal community in flowing waters provides a valuable energy food resource for invertebrates, fish, and others in the lotic food web. Algae are primary producers and integrate many of the biotic and abiotic parameters present in their surrounding environment. Evaluating benthic diatoms, attached to streambed substrata, provides a valuable record of existing environmental conditions. Regular monitoring of benthic diatoms (biomonitoring) can provide a record of environmental integrity. Biomonitoring Mississippi River sites is an important way to identify sources and causes of natural and anthropogenic impacts over time, so important for habitat protection and riparian corridor planning and management.

The Mississippi River Headwaters extends from Itasca State Park MN, Lake Itasca to the source, to Coon Rapids, MN, (728 km), where the large dams begin for barge traffic and navigation to the Gulf. The Mississippi River headwaters Board, out of Walker, MN, has selected five biomonitoring sites within the first 640 km for the evaluation of benthic algae, macroinvertebrates, fish, and water chemistry. I was able to sample sites near the source, within the Northern Lakes and Forests Ecoregion (sites 1 and 2) that demonstrated minimum human impact, and a third site (site 5) downstream within the North Central Hardwood Forests Ecoregion, an agriculturally based, small industry region that appears to be impacted by human activities; the remaining two sites were flooded and inaccessible for biomonitoring.

The benthic algal community was sampled in May, August, and October 1997 to provide spatial temporal data. Along with in-stream and corridor habitat assessment three specific substrates were used to collect benthic algal communities: rocks (epilithon), wood (epidendron) and depositional (epipelon). The samples were analyzed for specific taxa, taxa density, species diversity, and chlorophyll-a biomass. Primary water chemistry parameters were nitrate nitrogen, dissolved reactive phosphorus, hardness, alkalinity, pH, conductivity, and dissolved oxygen.

All three sites are mineral enriched by showing high nitrate nitrogen (0.65-1.60 mg/L), dissolved reactive phosphorus (0.02-0.10 mg/L), and pH (7.78-8.62). Conductivity at sites 1 and 2 was high (320-420 uS/cm) due to groundwater recharge, and lower at site 5 (130-260 uS/cm) due to increased stream network surface runoff and lakes in the path of the river. Sites 1 and 2 are naturally enriched from abundant high mineral groundwater recharge and plentiful wetland drainage, while site 5 is most likely enriched by human activities. Algal chlorophyll-a biomass was highest for epilithic algae, responding to enrichment. Site 1 epilithon chlorophyll-a ug/cm squared biomass was (4-40), site 2 (7.9-29.2), and very high at site 5 (48.8-148) primarily due to the complex architecture of the *Cladophora* "matted" racks. The same pattern of chlorophyll biomass was found for the three sites of depositional and wood substrata, again site 5 being the highest due to the greatest human impact.

Certain taxa of the benthic diatom community indicate that the environment shows both mineral and nutrient enrichment. Common species including *Cocconeis placentula* v. *Euglypta*, *Gomphonies olivacea*, *Melosira varians*, *Navicula tripunctata*, *Navicula salinarum* v. *Intermedia*, and *Nitzschia dissipata* are also common to the river (751 km from Source) in the lower headwaters near Monticello, MN a river region known to be nutrient enriched by area upstream industrial plants, treated wastewater effluents, intensive dry farming, large cattle industry and large watershed drainage.

Total diatom taxa identified for all three stations was 146. Seasonal collections of epilithic diatoms for site 1 showed total densities for all taxa ranging 0.1-34x10 cells/cm squared with the dominants *Gomphonies olivacea*, *Cocconeis placentula* v. *euglypta*, *Nitzschia palea*, *Navicula of saprophilia*, and a Simpson's Diversity 0.59-0.90. Site 2 total densities for all taxa ranged 0.39-9.4x 10 cells/cm squared with the dominants *Synedra ulna*, *Cocconeis*

placentula v. Euglypta, *Gomphoneis olivacea*, *Achnanthes minutissima*, and a Simpson's Diversity 0.84-0.95. Site 5 total densities for all taxa ranged 1.3-31.4x 10 cells/cm squared with the dominants *Synedra ulna*, *Gomphoneis olivacea*, *Cocconeis placentula v. euglypta*, *Melosira varians*, and a Simpson's Diversity 0.71-0.90.

Seasonal collections of epidendron and epipelon showed *Gomphoneis olivacea*, *Nitzschia dissipata*, *Diatoma vulgare*, *Meridion circulare*, *Cocconeis placentula v. euglypta*, *C.p. v. lineata*, *Rhoicosphenia curvata*, *Epithemia sorex* to be common taxa representing over 80% by density.

The findings from this study have led to the following recommendations: (1) quantitative samples should be obtained from the epilithic "in-place" dominant benthic diatom community in erosion habitats (flowing water) and not rely on small habitats like epidendron and epipelon since they are subject to deposition by upstream biota, sedimentation and drift, (2) a community monitoring table (CMT) be designed for biomonitoring and completed after each collection period in order to observe community structure trends and strengthening the site specific data base, (3) community summarizing methods, listed in the order of significance, such as density, chlorophyll-a biomass and Simpson's diversity index be determined to help identify changes in community structure, and (4) continue to collect and catalog physical and chemical habitat data.

APPROVED BY RESEARCH COMMITTEE: MAY 1998

Keith Knutson, Chairperson

A COMPARATIVE STUDY OF THE MACRO INVERTEBRATE ASSEMBLAGES AND WATER QUALITY IN TWO CENTRAL MINNESOTA TROUT STREAMS

Daniel R. Jolly

Stream systems are no longer viewed as ecologically isolated "pipelines" through the terrestrial environment but rather as integral parts of that environment. Understanding this interaction is especially important when dealing with anthropogenic stress on the ecosystem. Traditional chemical and physical water quality studies gain sensitivity and depth when a biological component is included with them. The study of MACRO INVERTEBRATE assemblages as biomonitors has become commonplace. However, long-term background data on temporal and spatial patterns in these communities is necessary before one can determine the effect a given anthropogenic stressor is having on the system. The present study was performed to collect background data on the MACRO INVERTEBRATE assemblages and water quality of Fairhaven and Teal creeks in Stearns County, Minnesota. A second objective was to determine whether or not any difference in the above factors exists between these streams which can be attributed to differences in land use practices in the watershed immediately surrounding them. Finally, a simple comparison of these data with data from a 1971-1972 study (Herbling 1973) of Fairhaven creek was done to add temporal depth to the present study.

Benthic MACRO INVERTEBRATE samples, along with chemical and physical data were collected once monthly from four sites in each stream from July-November, 1995. Substrate data were collected once, during October. Invertebrate data were evaluated in terms of taxa richness, percent composition, density and functional group ecology. In addition, Hilsenhoff's revised biotic index (1987) was used to assess levels of organic pollution. All of these factors were compared between streams and among sites within each stream using parametric two-tailed two sample T-tests and one-way analysis of variance (ANOVA), respectively. Physical and chemical data were used primarily as descriptors.

The results of the study showed Fairhaven and Teal Creeks to be physically, chemically and biologically very similar. Still, statistically significant differences in taxa richness, sample composition, density and feeding group ecology were found between the streams. Differences among sites within each stream, however, were more prominent in many cases than were differences between the streams. This suggests that natural differences along the course of each stream--including, perhaps, riparian zone condition and substrate composition--are presently more important in dictating the structure of MACRO INVERTEBRATE assemblages than are differing land use patterns in the watersheds surrounding them. Continued study Fairhaven and Teal Creeks, specifically with regard to primary and secondary productivity, longitudinal and temporal patterns in the invertebrate assemblages, and

detailed analysis of land use and riparian zone composition may grow from the data collected in this study. Such studies may be particularly instructive if present day differences in land use practice continue and the stream conditions diverge.

APPROVED BY RESEARCH COMMITTEE FEBRUARY 1997

Neal J. Voelz, Chairperson

THE BREEDING STATUS OF BIRDS AT CRANE MEADOWS NATIONAL WILDLIFE REFUGE IN CENTRAL MINNESOTA

Robert A. Maercklein

The birds of Crane Meadows National Wildlife Refuge, Morrison County, Minnesota, were studied during the 1996 breeding season to determine breeding status. Six different survey methods were used to collect the data. These included trail censuses, a weekly road survey, point counts, a raptor survey, night surveys, and a breeding bird atlas. All habitat types were surveyed by at least one method.

Each method used slightly different definitions upon which the breeding status was determined. Each method had different totals of birds that were of confirmed or probable breeding status. These were combined through the breeding bird atlas.

Ninety-nine species were considered to be confirmed breeders. A bird was considered to be confirmed for breeding if it was observed in suitable nesting habitat at a point count or a road survey stop. They were also considered to be breeding if I observed nests, young, or behavior indicating nests or young were nearby.

Three thousand one hundred thirty-one bird observations were recorded on maps. Maps of individual territories were produced from these data. Fifty-one species were confirmed for breeding through this method.

Four species are listed as probable breeding. These are species that showed incomplete evidence of territories and lacked the above criteria. They usually had a number of sightings or records in close proximity to each other to suggest that they may be breeding.

Nine other species were observed during the breeding season but only one, the Ovenbird, is considered to be a possible breeder. The others were considered to be late migrants, breeding species from outside the refuge, or non-breeding adults.

Fifty-eight additional species were observed outside the breeding season. A total of 168 species were observed between 9 September and 9 October 1996.

APPROVED BY RESEARCH COMMITTEE: MAY 1997

Alfred H. Grewe, Jr., Chairperson

A MOLECULAR ANALYSIS OF RAT KIDNEY L-ARGININE: GLYCINE AMIDINOTRANSFERASE GENE AND GENE PRODUCTS

Marcia Lynn Thomson O'Brien

Transaminidase is the first enzyme involved in the synthesis of creatine. Transaminidase activity is regulated at the pretranslational level by growth hormone and creatine (Zhang, B., 1990, McGuire, D.M., et al. 1994). Rat kidney and pancreas transaminidase enzymes have been purified and characterized (McGuire, D.M., et al. 1980).

Kinetically, the pancreatic and kidney transaminidase are biochemically indistinguishable. The enzymes are the same size, 44,000 daltons by SDS-PAGE, 88,000 daltons by sedimentation equilibrium. They purify by the same experimental scheme, and both are regulated the same way to the same degree by growth hormone and creatine. However, the pancreas transaminidase is not recognized by the kidney monoclonal antibody. In addition, the amino acid composition of the two enzymes is different (Van Pilsum, J.F., 1990).

Rat and human kidney transaminidase cDNA have been cloned and sequenced (McGuire, D.M., et al. 1994, Humm, A., et al. 1994). Both cDNA sequences code for protein 423 amino acids in length. They share 90.5% homology within the coding region. Both deduced amino acid sequences have leader sequences that are 37 amino acids long. This leader sequence is consistent with the location of transaminidase within the mitochondria. Rat and human deduced amino acid sequences share 98.3% sequence homology. Both the rat and human deduced amino acid sequences are 97.6% homologous to the pig transaminidase amino acid sequence.

Although much protein data exists regarding rat transaminidase, explanations for differences between the kidney and pancreas enzymes are insufficient. The present study uses the tools of molecular genetics to find a reasonable explanation. More specifically, rat transaminidase gene specific probes were prepared from the rat kidney, liver, and pancreas RNA by Northern Hybridization. In addition, PCR primers complementary to the kidney transaminidase cDNA were used to detect homologous RNA transcripts in kidney, liver and pancreatic RNA by reverse transcription polymerase chain reaction.

Southern blot hybridization results indicate the presence of a single transaminidase gene. Northern blot hybridization with transaminidase gene probe 1010 identified pancreas transcripts 5.2 kb and 2.3 kb in length, kidney transcripts 4.5 kb and 2.3 kb in length, and a single 3 kb transcript in the liver. The difference in intensity between the hybrids of a single tissue identified by Northern blot indicates that transaminidase transcripts go through post transcriptional modification. The kidney and pancreas mature transaminidase transcript are the same size and share a high degree of homology. The identification of a unique transcript in the liver indicates that there is an alternate pathway in the liver for the processing of the transaminidase transcript precursor. Although the liver processing pathway is different from the pathway of the kidney and pancreas, the liver transaminidase transcript shares homology to the kidney and pancreas transaminidase transcripts. This is the first report of the identification of transaminidase mRNA transcripts in liver and pancreas.

The results of RT-PCR, (reverse transcription - polymerase chain reaction) agree with the results obtained from Northern blot hybridization. The 1001 bp expected product was produced by RT-PCR from kidney and pancreas RNA. RT-PCR of liver RNA did not produce the 1001 bp expected product. High sensitivity imaging of RT-PCR products identified less abundant products in the liver, 1.9 kb, and pancreas, 1.9 kb and 1.6 kb. Less abundant products were not produced from kidney RNA.

The combined results from Southern blot and Northern blot hybridizations estimate the transaminidase gene to be not greater than 18.8 kb in size, and minimally 7.2 kb in size. Furthermore, the transaminidase gene must contain at least 3 introns.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1996

Denise M. McGuire, Chairperson

WINTER ASPECTS OF PRAIRIE CHICKEN ECOLOGY IN NORTHWEST MINNESOTA

Eric L. Rosenquist

Winter habitat characteristics, movements, survival and behaviors of radio-marked prairie chickens were investigated in northwest Minnesota from 1992-1994. One thousand six hundred and ninety-five relocations were collected from 111 radio-marked prairie chickens from October 25 to March 7 over both years.

Habitat use was diverse and varied with time period. Agriculture and grass/forb habitats were used in nearly equal amounts during the day (43% and 45%). Night habitat use was mostly grass/forb habitat with lesser amounts of agriculture and shrub habitat. Shrub habitat was used in small amounts. Prairie chickens were seldom found within the shrubs but rather in the herbacious vegetation associated with shrubs.

Private lands were used most often both day and night. Conservation Reserve Program lands and agriculture both received heavy use. Public lands were used in much lesser amounts. Greatest use of public lands occurred at night.

Vegetation 26-50 cm tall received most use for roosting and loafing whereas height class 0-8 cm was used during feeding. Lands disturbed more than >4 years previous were used most often for roosting, comparatively lands

disturbed <than 6 months previous received high use during feeding periods.

Snow burrows were the preferred night roost type. The use of snow burrows was believed to serve a heat conservation function. The combination of grass and forb were important at night roost areas. Areas with thick strands of grass prevented snow burrowing and received little use.

Mean seasonal home range was 1724.0 ± 3561.8 ha. Females had the greatest home ranges. Males had the smallest home ranges and showed fidelity to their home booming ground. Mean daily home range was 82.3 ha. Prairie chickens tended to associate with booming grounds, 89.9% of locations were within 4.8 km of a booming ground.

Winter survival was 57.7% and 79.2% for 1992-1993 and 1993-1994, respectively. Decreases in survival are thought the result of snow covering regular feeding areas forcing birds to move. Survival increased and remained high once in stable feeding areas. Survival decreases at winters end are probably the result of birds suffering from the cumulative stresses incurred throughout the winter. Adult males had highest mean survival (85%) while immature females had lowest (62.5%)

Mean daytime flock size was 16.7 ± 15.3 while mean night flock size (at night roosts) was 5.7 ± 5.3 .

Management efforts should strive to provide a combination of roosting cover and feeding areas. If food plots are required they should be located around a complex of booming grounds. CRP lands should be maintained and managed. Substituting hardy forbs in place of alfalfa would be beneficial.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1996

Alfred H. Grewe, Jr., Chairperson

A SURVEY OF THE MACRO INVERTEBRATE ASSEMBLAGES AND WATER QUALITY OF A CENTRAL MINNESOTA TROUT STREAM

Brian D. Rudolph

The view of stream systems as isolated channels, separate and detached from the terrestrial environment is a concept of the past. These systems play essential roles in the ecology of the watersheds which they drain. Comprehension of this linkage is imperative when attempting to understand anthropogenic stress on aquatic systems. Traditional physical and chemical water quality studies gain depth and sensitivity when a biological component is added to them. The use of MACRO INVERTEBRATE assemblages as biomonitors of a stream environment is now common. However, it is essential to have long term background data on these assemblages in order to identify variations within a community of organisms. These temporal and spatial patterns must be known before one can establish the effects of anthropogenic stress on a lotic system.

The present study was performed to collect detailed background data on the MACRO INVERTEBRATE community and some physical and chemical parameters in Little Rock Creek which would provide a baseline for future studies on the integrity of this catchment and the invertebrate assemblages that inhabit the stream. A second objective was to make a comparison among study sites that traverse the upper section of Little Rock Creek (where trout are found) and determine if local/surrounding land use practices are contributing to the differences in quality of water and macroninvertebrate assemblages.

Benthic MACRO INVERTEBRATE samples, along with physical and chemical data were collected monthly at three sites from May-October 1996. Physical and chemical data were used to evaluate and describe stream conditions. Substrate data were collected once during October. Invertebrate biomass, an functional feeding group ecology. In addition, hilsenhoff's revised biotic index (1987) was used to assess levels of organic pollution.

The results of the study reveal sites that are chemically similar but have noticeable variations. Difference in substrate composition, taxa richness, composition of taxa, biomass and functional feeding group ecology were evident among three sites. The data show that this stream is undergoing at least moderate stress most likely caused by alteration of the terrain surrounding this system by agricultural usage. This is especially evident in site 1 (located near the headwaters), where both substrate and invertebrate communities are mostly different from downstream sites. Hilsenhoff's biotic index indicates fair water quality conditions stream-wide with the highest potential pollution impact at site 1. Continued study of Little rock Creek including information on primary and secondary productivity,

temporal and spatial patterns in the invertebrate assemblages, and in-depth analysis of land use practices and riparianzone condition/composition may benefit from the baseline data collected in this project. Such studies would enhance understanding of the influences affecting Little Rock Creek and could help predict system wide changes in the future.

APPROVED BY RESEARCH COMMITTEE: NOVEMBER 1997

Neal J. Voelz, Chairperson

BREEDING BIRDS AND ASSOCIATED UPLAND HABITATS OF SHERBURNE NATIONAL WILDLIFE REFUGE

Kent A. Sundseth

Sherburne National Wildlife Refuge supports a variety of upland habitats. These upland habitats may be divided into four main types: oak dominated woodlands, oak savanna, grassland and conifer plantations. Each of these habitats occupies a location along a vegetation gradient which begins with open grassland and ends with a stand of densely planted conifers. As the vegetation changes along the gradient so do the species of birds breeding there.

During the spring and summer months of 1994-1996, a network of 73 survey points was established in the four main habitat types across the refuge. In 1995 and 1996 these points were sampled for breeding birds using a standardized point count method. Baseline data on the relative abundance and distribution of breeding birds in the upland habitats was established. In the summer of 1996 the vegetation surrounding most of the survey points was sampled using a standardized relevé method. Information on vegetation structure and species composition was collected. Some patterns and associations between breeding birds and habitats were noted.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1996

Alfred H. Grewe, Jr., Chairperson

AQUATIC INSECT TRAPPING AND SEPARATING METHODS FOR WETLAND SAMPLING

Melanie S. Waite

There is a need for easy to make and use, aquatic insect traps and separators that can be used in the field. Testing was done to newly developed traps and separators in the field and compared to standard collection methods. The standards used were net and box samples. A six-sided muck trap, that was meant to trap surface-dwelling insects near the shore line, and six-sided floating trap, that was meant to trap surface-dwelling insects out in open water, were both found to be inefficient when compared to the standards. A vertical 2-liter pop bottle trap was developed to see if any vertical moving insects would more readily enter it than a horizontally positioned 2-liter pop bottle trap. The horizontal trap did collect more insects when compared to the total numbers in the vertical trap. The vertical trap provided a cleaner sample which is easier to sort through. Both the vertical and horizontal traps are superior to the net and bad samples when it comes to taxa deverity and total numbers. Separating insects from a standard net or box sample is a long and tedious process, so three different separating techniques were tested. A funnel separator using only water, a funnel separator using a diluted acidol solution, a shallow tray separator and a light/dark tray separator were tried. The acidol dilution was more effective in separating the insects from the debris than the plain water funnel separator. The tray separator was quicker and easier to use than he larger funnel separators, but the tray separator allowed fine sediments to drop through. The light/dark tray separator did not work well enough to warrant further tests.

APPROVED BY RESEARCH COMMITTEE: AUGUST 1997

Ralph Gundersen, Chairperson

ANALYSIS OF GREATER PRAIRIE CHICKEN OPEN SPACE REQUIREMENTS USING A GEOGRAPHIC INFORMATION SYSTEM

Sandra L. Wilmore

A Geographic Information System (GIS) was developed to analyze the open space requirements of greater prairie chickens, *Tympanuchus cupido pinnatus*. Individual trees and wood lots were digitized from aerial slides to supplement land use and base data layers acquired. The average treeless area around booming grounds was 351.5 ha. The average open area without considering trees was 461.6 ha. Distances from booming grounds to nearest trees, wood lots, and shrubs compared with those from random points suggest that prairie chickens are not selecting for large treeless areas to display on. However, the age of the data sources used proved to be a problem and error levels were unacceptable. Open areas are succeeding to wooded areas faster than was expected. The results overestimate available open areas as well as potential nesting cover.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1996
Dr. Al Grewe, Chairperson

THE EFFECTS OF RELAXIN, ATRIAL, NATRIURETIC PEPTIDE (ANP), AND THE INTERACTION OF THECA AND GRANULOSA CELLS ON PORCINE OVARIAN ANP AND PROGESTERONE PRODUCTION DURING IN VITRO LUTEINIZATION

Huamei Heidi Zhang

RLX, ANP and P4 are products of ovarian follicles. This study examines the possibility of paracrine interaction between in vitro luteinized theca cells (LTC) and granulosa cells (LGC) and the effects of relaxin and ANP on ANP and P4 production. Ovarian follicles were obtained from mature (>10 month) Yucatan micropigs. RLX or ANP was administered at 0, 10, 100, and 1000ng/ml to TC:GC as 100:0, 75:25, 50:50, 25:75, and 0:100 mixed cell cultures (numbers represent percent of each cell type in the mixture). Media and cells were harvested at 48 and 96 h. Total RNA, DNA and protein were extracted from cells. Both media and cellular ANP were purified on activated Sep-Pak C18 columns. ANP and P4 contents were determined by RIA. DNA content was measured by spectrophotometric analysis. At 48 h total ANP production was higher in mixed cell cultures than in pure cultures. At 48 h LTC ANP production was stimulated by 1000 ng/ml RLX, and inhibited by low RLX (10 and 100 ng/ml); LGC ANP was inhibited by high and low RLX (10 and 100 ng/ml), but stimulated by 100 ng/ml of RLX administration. At 96 h total ANP production was also higher in mixed than in pure cultures. ANP production in LTC was stimulated by RLX (10-100 ng/ml), and inhibited by RLX (1000ng/ml). However, LGC ANP was inhibited by RLX. For P4 secretion, mixed cells produced P4 than pure theca or granulosa cells. ANP stimulated P4 secretion by 75:25 and 50:50 of mixed cell cultures in response to high RLX were lower than that in medium RLX (100ng/ml). These results suggest that both LTC and LGC produce ANP and P4 and those are modulated by RLX and ANP. The interaction between these cells is important in both ANP and P4 production.

APPROVED BY RESEARCH COMMITTEE: JULY 1997
A.I. Musah, Chairperson

INDUSTRIAL STUDIES

THE DEVELOPMENT OF A TEMPLATE PROCESS SAFETY MANAGEMENT PROGRAM WITH RECOMMENDATIONS FOR IMPLEMENTATION IN A DISTILLERY SETTING

Jim Fowler

PROBLEM: The purpose of this thesis was to develop a template Process Safety Management program that provided a means to meet the basic regulatory requirements of 29 CFR Part 1910.119, Process Safety Management of Highly Hazardous Chemicals, and to author recommendations that would aid in the development and implementation of a complete program in a distillery setting. This template program was intended to be presented to and utilized by the researcher's employer in servicing clients.

PROCEDURE: The researcher recognized a need for developing a template Process Safety Management program that would provide a starting point for developing a program that would meet the basic requirements of 29 CFR Part 1910.119. This template program could then be used as a basis for a complete program for any company required to meet the requirements of the standard. The idea of authoring implementation recommendations directed towards a distillery setting was also developed at this time.

A review of the literature was conducted to enable the researcher to become better familiar with the history surrounding the development of the standard, procedures being used to meet the requirements of the standard, opinions of industry professionals, and how the standard had affected various industries. The information from the literature review was then used to assist in the development of a template Process Safety Management program.

The researcher audited and evaluated a distillery setting to review processes and develop recommendations for implementation of a complete Process Safety Management program in a distillery setting similar to the one visited.

CONCLUSION: A template Process Safety Management program was developed following the requirements of the standard. The template program was not considered complete until expanded with additional information from a specific company. The template program was then validated by industry experts to confirm it would meet the requirements of the standard when expanded as indicated. The template program was also approved by the researcher's employer.

Recommendations for implementation of a complete Process Safety Management program in a distillery setting were authored.

APPROVED BY RESEARCH COMMITTEE, FEBRUARY 1997

Gerald Nestel, Chairperson

AN ASSESSMENT OF TECHNOLOGY EDUCATION IN MIDDLE LEVEL SCHOOLS OF SOUTH DAKOTA

Steven A. Thiess

SUMMARY: The discipline of technology education has gone through many changes in its brief history. Today's practitioners are confused in its direction and the lack of uniformity in practice. The purpose of this study is to assess and describe the technology education curriculum content in middle level schools of South Dakota. Specifically the study will answer the following questions:

1. What is the subject content in technology education being taught in the middle level schools of South Dakota?
2. What type of delivery system is being utilized?
3. What titles are being used for the subject?
4. How much technology education is required of students in middle level schools of South Dakota?

A review of literature was conducted to provide an historical perspective of technology education. The current difference of opinions in the discipline will be seen as not a new phenomenon.

This research study centered on data that was obtained from technology educators in middle level schools of South Dakota. A survey instrument was developed to describe current technology education programs.

The evaluation of questionnaire data indicated that there are many teaching methods and course titles being used in the teaching of technology education in the middle level schools of South Dakota. There also is a wide range of instructional units being taught. Some of the most popular units include: aerospace & aviation, communication technology, computer assisted drafting, measuring, plastics, and woodworking.

The profession has had a history of controversy and chaos but much good seems to come out of the chaos. Technology education is always in a state of transition and perhaps that is good.

APPROVED BY RESEARCH COMMITTEE: NOVEMBER 1997

William J. Lacroix, Chairperson

AN ASSESSMENT OF MANUAL DRAFTING IN 2-YEAR POST SECONDARY ARCHITECTURAL DRAFTING PROGRAMS

William B. Vennes

PROBLEM: The problem of this study is to assess the current status and determine the rationale for retaining or eliminating manual drafting curriculum (training) in 2-year post secondary architectural drafting programs. Specifically, the study determines if instructors, in programs in Minnesota and surrounding states, have educational reasons, such as accuracy or comprehension, for requiring students to use or learn manual drawing techniques. The study also assesses students in a 2-year architectural program to determine if they see value in taking manual drafting classes.

PROCEDURE: To better assess the educational aspects of manual drawing it was determined that two surveys, with similar questions, would be given to architectural educators and students. Twenty-four 2-year programs were identified in Wisconsin, Minnesota, North Dakota, South Dakota and Iowa. Surveys were sent to 56 individual instructors at these schools. These surveys were designed to measure instructors' observations of student performance while using manual drafting and CAD (computer aided drafting).

A student population was surveyed at the Architectural Construction Technology program at St. Cloud Technical College. Fifty-two 1st-and 2nd-year students were asked to rate their performance with manual drafting and CAD. The results of the survey can be used by instructors and administrators in determining if manual drafting should be eliminated from architectural drafting curriculums.

ANALYSIS: Data was analyzed in the areas of accuracy, speed, comprehension, creativity, interest, completeness, detail and construction knowledge as they applied to student use of manual drafting and CAD. Responses to questions were cross referenced to background items such as instructors' teaching and industry experience and students' age and CAD experience.

CONCLUSION: Students and Instructors reported that CAD helps students to accomplish drafting projects faster and more accurately. It also helps student interest by giving fast return on student input. Manual drafting helps students learn construction principles, think through drafting problems and may help them be more creative.

The responses indicate very convincingly that both instructors and students feel that despite advances in

CAD systems, it is necessary for architectural drafting students to continue to learn manual drafting. The results also showed that students should learn manual drafting before learning CAD. Students and instructors that were surveyed did not feel that manual drafting classes should be eliminated from architectural drafting curriculums.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Philip G. Bergstrom, Chairperson

MATHEMATICS & COMPUTER SCIENCE

A GENETIC ALGORITHM FOR THE MINIMUM WEIGHT TRIANGULATION PROBLEM

Kerry Capp

One of the most difficult kinds of problems to solve in computer science is one of a combinatorial nature. It is sometimes desired to find optimal solutions to combinatorial problems. For problems that have a polynomial-time solution, this is easy. However, there is a large group of problems that do not have easy solutions. This kind of problem is the focus of this research.

The problem for this project is found in the realm of a computational geometry. It is called the minimum weight triangulation problem. Given a finite set of points in a plane, such that no three points are collinear, a triangulation is a maximal set of nonintersecting line segments connecting those points. The weight of a triangulation is the sum of the Euclidean lengths of its line segments. The problem is to find a triangulation of minimum weight. Since no polynomial-time algorithm is known to find a triangulation of minimum weight, other techniques can be used to try to solve this problem.

One technique is to use a genetic algorithm. Genetic algorithms are probabilistic algorithms whose search methods model genetic inheritance and Darwinian competition for survival. Genetic algorithms have been used on many combinatorial problems.

Results find that the genetic algorithm used for this project is at least as good as a well known polynomial-time algorithm for trying to minimize a triangulation of points. These results also show that using genetic algorithms is a good technique for finding solutions to problems where traditional techniques fall short.

APPROVED BY RESEARCH COMMITTEE: MAY 1997

Bryant A. Julstrom, Chairperson

TRUE IDENTITY: PANOGRAPHIC PATTERN MATCHING TECHNIQUES

Captain Mark J. Lundtvedt

The advent of mass destruction weapons poses a military challenge to accurately, quickly, and effectively identify fallen soldiers. The panorex is an x-ray of teeth used by the Army to positively identify a cadaver. The goal is to apply computer-based matching techniques to compare existing x-rays taken of a cadaver, in order to discover more quickly the cadaver's identity.

This thesis describes the basic techniques of forensic odontology, analyzed panorex qualities, features, and standard scenery for use in digitized comparisons, discusses classification and pattern recognition, and develops an algorithm.

APPROVED BY RESEARCH COMMITTEE DECEMBER, 1996
Bryant Julstrom, Chairperson

INSTRUCTIONAL MULTIMEDIA: FROM THEORY TO PRACTICE

Yue Shen

The purposes of this paper are to develop a instructional multimedia system called the UNIX File System Package and examine the efficiency and effectiveness of this system.

Instructional multimedia evolves from Computer Based Training (CBT), which was dominant during the early PC era and was used to describe interactive training programs. Although computer software and hardware techniques change quickly, the theories of good CBT design remain unchanged. Several CBT design modes are introduced and the basic phases of developing a CBT program are addressed in the paper.

The UNIX File System Package was designed based on the CBT theories. An authoring system called Authorware was chosen to implement its design. Each phase of development is introduced in detail in the paper. Three classes of students participated in the evaluation of the UNIX File System Package and the results were gathered based on their performances and feedback. Evidence shows that the students not only accept but also like this computer-based teaching method. Using it, they can learn more quickly than with ordinary teaching methods.

APPROVED BY RESEARCH COMMITTEE, FEBRUARY 1997
Bryant A. Julstrom, Chairperson

COLLEGE OF SOCIAL SCIENCES

APPLIED ECONOMICS

AN EMPIRICAL ANALYSIS OF THE RELATIONSHIP BETWEEN MONEY AND THE AGGREGATE PRODUCTION FUNCTION

Kadiri Liassou

Many economists share the opinion that production is more efficient in a monetary economy than in a barter economy. The logic of the idea is that the resources needed to achieve the double coincidence of wants in a barter economy may be used in the process of production and therefore may improve efficiency.

The first empirical study on the subject was done by Sinai and Stokes (1972). They found that the trend variable which represented technical changes may be a proxy for real money balances. This study was followed by several other empirical investigations of money in the aggregate production function studies. N'guyen (1986) reached the conclusion that money is a proxy for trend and the mechanism by which money enters the production function is in the contribution of its growth rate to productivity growth.

The main thrust of this study is to re-examine N'guyen's work using the augmented Dickey-Fuller tests for integration and cointegration. The results show that money and its growth rate do not play a statistically significant

role in the production function, neither as an input nor as a factor whose growth rate contributes to productivity growth. The variables are cointegrated, suggesting the existence of a long-term relationship between money and aggregate output.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Masoud Moghaddam, Chairperson

BUDGET DEFICITS AND LONG-TERM INTEREST RATES: EVIDENCE FROM THE ERROR CORRECTION MODEL

Yeah Boon Siew

The impact of federal budget deficits on interest rates has been studied extensively. Many researchers find the existence of a positive relationship between federal budget deficits and interest rates. Nevertheless, there are exceptions in that budget deficits do not exert any significant impact on the long-term interest rates. Only a few researchers draw the same conclusion in terms of the impact of budget deficits on short-term interest rates.

Cebula studied the impact of budget deficits on the ex-ante long-term interest rates and found a positive relationship between budget deficits and long-term interest rates. This study reestimates Cebula's model using the error correction modeling (ECM). The ECM is a more appropriate estimation technique than the first-differencing method used by Cebula because the ECM utilizes long-run information and at the same time allows for short-term dynamic adjustments.

The use of the ECM yields different findings compared to the first-differencing technique especially in terms of the magnitudes of coefficients of both three-month Treasury bill creates and budget deficits variables. However, both studies do conclude that budget deficits directly affect ex-ante long-term rates.

APPROVED BY RESEARCH COMMITTEE: MAY 1998

Masoud Moghaddam, Chairperson

CRIMINAL JUSTICE

MINNESOTA PROBATION AND PAROLE IN PERIL

Terryl Arola

Probation and parole officers sometimes work with dangerous and unpredictable offenders. In a world often seen as more violent, encouraging law-abiding behavior and holding offenders accountable can be difficult. Probation and parole officers have become increasingly aware of safety issues on the job. Three hundred and eighty-four probation and parole officers in the State of Minnesota were surveyed regarding hazardous incidents they had encountered while on the job. Results of this study are consistent with similar research that suggest victimization does occur to probation and parole officers on the job and that there are safety measures that can be implemented. Recommendations for agency policies and procedures are presented.

APPROVED BY RESEARCH COMMITTEE: JULY 1997

Richard Lawrence

DEMOGRAPHIC AND VIOLATION CHARACTERISTICS OF INSPECTED MINNESOTA HAZARDOUS WASTE GENERATORS: 1994-1996

Lee Patrick Gearhart

Hazardous waste generators that deviate from federal and state environmental regulations pose a threat to the environment and the reputation of law-abiding businesses. The aim of this study was to identify characteristics of inspected Minnesota hazardous waste generators so that environmental enforcement officials may be better able to educate themselves and prevent future violations by hazardous waste generators by knowing where to focus their attention. A sample of 708 inspected hazardous waste generators for the years 1994 to 1996 was collected from the Minnesota Pollution Control Agency (MPCA). The data were examined by size of generator (Very Small Quantity Generators [VSQG], Small Quantity Generators [SQG], and Large Quantity Generators [LQG]) to determine whether statistically significant differences existed between generator size and the demographic variables, inspections, violations and penalties. The results of this study found that, generally, smaller quantity generators had significantly more inspections, more violations, were more likely to be from greater Minnesota counties and involved in agricultural-related industry; surprisingly, LQGs received more penalties. As a result of this study, the MPCA must either train smaller quantity generators through more inspections or seek alternative forms of enforcement (i.e., criminal sanctions) to ensure generators are in compliance with the law.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

F. Barry Schreiber, Chairperson

AN INTEGRATIVE REVIEW OF CRIMINOLOGICAL THEORY: DETERMINING THE EXTENT TO WHICH THE SCOPE CONDITIONS OF TIME AND LOCATION HAVE BEEN ADDRESSED

Douglas L. Gilbertson

Modern social science is the result of the development of numerous perspectives which attempt to explain social phenomena. One such explanation is offered by Turner (1978). He suggests that concepts explain phenomena from either a concrete or abstract perspective which is relative to the scope conditions of time and location. This study--using Turner's scope conditions--defines time as events of periods of human existence (conception, prenatal, birth, and life-course). It defines location as either individuals (focusing on individuals of social networks) or as structures (focusing on groups, organizations, and society).

The body of knowledge related to criminal behavior is established within this study by a literature review of sampled authors (n = 104) within sociology, psychology, and biology. A qualitative, integrative review methodology is applied to determine the extent to which Turner's scope conditions (time and location) have been addressed within dominant criminological theory.

This study finds that within the sampled authors of theoretical concepts, the scope condition of time relative to the prenatal period or the event of birth is not specifically addressed. The study suggests--regarding the scope condition of location--that authors of concepts related to criminal behavior do not address possible factors (a) which originate outside the womb; (b) which may be introduced or present during the prenatal period or birth; (c) which may be perceived by the fetus in utero or at birth; (d) which reflect a social learning or psychological nature; and (e) which may influence behavior.

This study cites research outside the field of criminology concerning fetal capability to perceive, and to respond to, external stimuli before and after birth--specifically, sound and pain. A recommendation is presented for

further examination and research of these possible factors during the prenatal period and the event of birth to determine (a) whether they may indeed represent a prenatal learning phase, (b) whether they may influence behavior, and (c) whether possible inclusion in criminological theory development is warranted.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1996

Dick T. Andzenge, Chairperson

REDUCING JUVENILE DELINQUENCY THROUGH AFTER-SCHOOL ACTIVITIES IN MINNEAPOLIS, MINNESOTA

Richard Earl Kittilson

The purpose of this thesis was to address the need for after-school programs, and report on a preliminary survey of several youth programs that provide after-school activities in Minneapolis, Minnesota.

Two sources of data were used to gain insight into the need for and effectiveness of after-school activities in Minneapolis: asking questions and making direct observations through on-site visits. Youth programs were contacted through purposive sampling. Directors, coordinators, and volunteers of agencies providing after-school activities were interviewed; the mode of administration was on the telephone. Additionally, on-site visits of after-school programs were made to conduct field research.

This thesis has revealed that there is a clear need for some type of after-school activities to help curb the increase in juvenile crime between the hours of 3 p.m. to 6 p.m.. Youth program personnel in Minneapolis agree with findings of other studies; juvenile crime peaks during after-school hours. The personnel contacted as part of this preliminary survey believe they are filling an important need, and that their programs offer activities that are helping to prevent many youths from engaging in delinquent behavior.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Richard Lawrence, Chairperson

THE EFFECTS OF A THREE MONTH, PRISON-MANDATED CHEMICAL DEPENDENCY TREATMENT PROGRAM ON INMATE DISCIPLINE REPORTS

Jeffrey D. Spies

A number of studies have shown that treatment efforts of various kinds in the prison setting can reduce an offender's tendency to recidivate into criminal behavior following release from prison. Few research endeavors have focused on inmate institutional behavior during and after treatment participation, however.

This study examined the relationship between completion of a three-month, mandated chemical dependency treatment program and subsequent behavior in prison, using behavior reports written by prison staff to measure misconduct. It utilized two matched groups of inmates, a treatment group (19 inmates who completed chemical dependency treatment) and a control group (19 inmates who did not participate in treatment). Participants in each group were individually matched on demographic variables including age, race, academic level, and past gang involvement. The two groups matched on 82.9% of the demographic variables. The study attempted to answer the question: Does prison-mandated chemical dependency treatment programming for inmates have an effect on inmate discipline reports that can be measured during and/or after completion of the program?

FINDINGS: Generally, the results of this study show that prison inmates who attended and completed the Reshape chemical dependency treatment program at the Minnesota Correctional Facility in St. Cloud, Minnesota recorded significantly fewer ($p < .02$) behavior reports following treatment than they did prior to experiencing the treatment program. Specifically, prior to treatment group of 19 inmates recorded fifteen behavior reports prior to

treatment and only four reports following treatment. Furthermore, the treatment group recorded significantly fewer behavior reports (four) than the matched control group (twenty) during the three-month period following treatment ($p < .02$). Results of this pilot study are discussed as are possible explanations of the results.

APPROVED BY RESEARCH COMMITTEE: APRIL 1998

F. Barry Schreiber

GEOGRAPHY

URBAN DEVELOPMENT PATTERNS: THE UTILIZATION OF A PRESENT LAND USE CLASSIFICATION SYSTEM AS APPLIED TO HISTORICAL AERIAL PHOTOGRAPHIC DATA; ST. LOUIS PARK, MINNESOTA, 1937-1994

Gary Gelzer

The purpose of this study is to determine if distinct development patterns exist within a community and once in place remain in effect over long periods of time.

The study consisted of series of phases, with the first being a general understanding of patterns in urban land use and the historical development of these patterns. The next phase defined the categories of land use in general and why the specific classification system for identifying land use was selected. The system enabled the data to be reconciled with the St. Louis Park zoning system and USGS Level II land use classification system.

The study of St. Louis Park utilized aerial data in the form of various sized polygons as the primary tool of this investigation. The study then integrated the historical aerial data with the developed land use classification system. Aerial photography for the following years was obtained: 1937, 1940, 1953, 1957, 1964, 1968, 1973, 1980, 1990, and 1994, for a total of 10 missions. The investigator categorized the data in a reverse chronological order, starting from 1994. The investigator utilized field observation, direct recognition and probabilistic interpretation in the classification of the aerial data, additionally collateral information was used wherever possible to substantiate the classification process.

The integration of the historical photographic data and the developed classification system was presented in a series of land use maps and map like images. The project utilizes the technologies of Remote Sensing and Geographic Information Systems to bring together the large amount of spatial data that had been collected, to analyze that data and to present it in a meaningful manner.

Finally, the yearly land use data sets were analyzed to determine if patterns were present. Industry developed along the metropolitan corridor and was oriented to the railroad. Commercial services developed along the main roads of the city and are much more influenced by the highway intersections of the metropolitan core. Lastly the original hypothesis was examined and parts were accepted (axial patterns along transportation corridors) and the remainder was rejected (circular development from a central location).

The 57 year time span of the study depicted a community with an extensive agricultural orientation changing to a city that density wise, falls just below Minneapolis and St. Paul.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1996

Robert O. Bixby, Chairperson

AN INTEGRATED SPATIAL ANALYSIS TOOL FOR ELECTRICAL UTILITY PLANNING

Eric Goodman

Electrical utility planners have relied for many years on traditional methods for the analysis of data for electrical utility planning. However, because of the tremendous importance of short and long range planning on the future of the utility, planning plays a significant role. While advanced spatial analysis technologies have existed for several years, many electrical planners have failed to take advantage of these tools due to the lack of an defined integrated spatial analysis tool. This problem may be overcome by the application of an integrated spatial analysis tool (ISAT).

A site location of Goodhue County Cooperative Electric, Zumbrota, Minnesota; is used as a subject site. A discussion of the cooperatives background and geography provide the basis for the selection of as a subject site.

The particular spatial analysis technologies utilized in the ISAT are presented with each systems' theory, operation and technical characteristics summarized. The component technologies of the ISAT are Differential Global Positioning System (DGPS), Geographic Information Systems (GIS), and aerial remote sensing data.

A preliminary operation of the ISAT demonstrates the ability to implement an accurate and efficient planning process for accurate data collection using DGPS, as well as data capture, storage and analysis methods for the GIS component of the overall system. The capability of aerial remote sensing in performing advanced spatial analysis of the topographic regions of the cooperatives service area is also shown. Suggested techniques for the electrical utility planner using various technologies, such as performing data collection, are also noted.

Sample data derived from the preliminary operation of the tool is then analyzed and presented for comparison against the standard process. GIS data developed from Wessex, terrain coverages, power line, and pole data.

Several conclusions are drawn from the initial operation of the ISAT tool. First, numerous spatial databases exist which can lessen the implementation time of an electrical planning process. Second, high accuracy sensors such as DGPS allow planners to obtain highly accurate spatial data, thus resulting in enhanced analysis. Finally, the use of a GIS system will greatly improve the overall efficiency accuracy for the electrical utility planner due to its inherent capability in the data management and storage.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1996
Benjamin Richason, Chairperson

ASSESSING ARC/INFO'S REGION FEATURE THROUGH DEVELOPMENT OF A FOREST CONCEALMENT MANAGEMENT ZONE AT CAMP RIPLEY TRAINING SITE, MINNESOTA

Peter H. Knutson

Today's military land managers are challenged with maintaining and preserving natural resources that are sometimes used very heavily. GIS is quickly becoming the foundation for natural resource management plans on many military installations across the country. Many difficult decisions must be made about natural resources and military training value of the land for years to come. The purpose of this thesis is to illustrate the value and efficiency of ARC/INFO's region data model by the development and implementation of a Forest Concealment Management Zone (FCMZ) at Camp Ripley Training Site in Minnesota. The purpose of the FCMZ is to identify forested areas that are subject to higher levels of military training and to help maintain or rehabilitate them to sustain the needed amount of concealment for realistic training. The FCMZ is also intended to protect sensitive land features (e.g., historic sites and wetlands) that might otherwise be impacted negatively from timber harvesting or intense military training. This thesis compares two methods of developing and implementing the FCMZ, one using

the traditional polygon data model and the other using the region data model. The results indicate and show how powerful the regions data model is for implementing a complex environmental management zone as compared to traditional methods of the past. The regions data model is definitely worth incorporating into future GIS operations, particularly for military land managers across the country. Results of this thesis will also enable Camp Ripley land managers to develop a long-range forest management program without sacrificing military training and sensitive environmental features.

APPROVED BY RESEARCH COMMITTEE, JULY 1996

Benjamin F. Richason, Chairperson

THE STUDY OF MINNESOTA'S ORDERLY ANNEXATION STATUTE: A VIABLE ALTERNATIVE FOR URBAN GROWTH; CITY OF ST. JOSEPH AND ST. JOSEPH TOWNSHIP, STEARNS COUNTY, MINNESOTA

Katherine Liljequist

This study analyzed the intent of Minnesota's Orderly Annexation Statute (414.0325) and local governmental implementation options. This statute provides for one or more townships and one or more municipalities to designate an area in need of annexation. The governments jointly determine how and when the annexation occurs and who has jurisdiction over said area. The study dealt with three main issues. First, it deals with the reasons this legislation was necessary and factors guiding this development process in 1978. Next, there is a review of state-wide applications by local units of government. Finally, this study addresses the role of the Minnesota State Municipal Board in the application of an Orderly Annexation Agreement. Upon review of available literature, this type of study has not been completed. It is anticipated that the results of this study will be utilized by the legislature to review the statute and possibility make revisions to better serve the citizens.

The case study dealt with the communities of St. Joseph and St. Joseph Township. A brief history of each community and their relationships is addressed. The research examined why they are considering an Orderly Annexation Agreement and what options are available to them. There is also an overview of their decision-making process including setting up a joint decision-making body to review their options and the issues that were addressed in their meetings. This study identifies potential problems in drafting an Orderly Annexation Agreement addressed by these two governing bodies.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1996

Robert O. Bixby, Chairperson

A CUSTOMIZED COMPUTER APPLICATION FOR DATABASE INTEGRATION AND SPATIAL ANALYSIS

Brian K. Schreurs

The problem of integrating incompatible databases in a customized Geographic Information System (GIS) application for use in resource management at the Sherburne Wildlife Refuge is addressed in this study. In order to approach the problem, the implementation of SQL language within a PC platform Arcview2 GIS will provide a means in which database information can be associated with geographic features. Additionally, use of Arcview's Avenue language will provide the ability to customize the GIS graphical interface to perform a specific application.

The result of this study is the creation of an application for analysis of vegetation with the Sherburne Wildlife Refuge. The application will allow non-technical personal to effectively utilize current database information for analysis within a GIS.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Robert Bixby, Chairperson

IMPROVING NATURAL RESOURCE MANAGEMENT DECISIONS: AN APPLICATION OF EXECUTIVE INFORMATION SYSTEMS CONCEPTS IN GEOGRAPHIC INFORMATION SYSTEM DEVELOPMENT

Mark A. Wald

Land use decisions made by natural resource managers influence land use activities, thus affecting the quality of the environment. Negative impacts to the ecosystem may be avoided when managers are able to make more informed land use decisions. Maps provide auxiliary information to senior-level material resource managers by showing the geographic distribution of resources that would be affected by management activities. Managers could use a geographic information system (GIS) to view and query digital maps. Although GIS systems are beneficial, most managers do not know how to use them. Executive information systems are designed for business executives to easily access and analyze strategic information. Senior-level resource managers could more easily use a GIS with executive information system capabilities.

To simplify the process of viewing and querying data with a GIS, this thesis demonstrates how concepts in executive information systems can be used in a GIS application. The application enables resource managers to quickly view, plot, and share graphical data in the forms of maps. The application was designed as a "proof-of-concept" to be used by resource managers at the Minnesota Department of Natural Resources (DNR). An information needs assessment with selected senior-level resource managers at the DNR was conducted. The Boundary Waters Canoe Area (BWCA) was chosen as a site for a case study explaining how this research could be applied. Data covering the extent of the BWCA was then collected. After identifying which executive information systems concepts to integrate, the GIS application was developed using ArcView 3.0 software. This application allows resource managers to view and share data pertaining to geographic areas that would be affected by land use decisions. A historical background of the conflicts over the management of the BWCA is explained. This thesis postulates that a GIS would provide natural resource managers with information needed to make decisions on the management of the BWCA. Presented is a description of how these managers would use the application to view data pertaining to the BWCA.

Key Words: Geographic Information Systems, Executive Information Systems, Application Development, Natural Resource Management.

APPROVED BY RESEARCH COMMITTEE: AUGUST 1997

Benjamin Richason III, Chairperson

AVIATION PLANNING FOR AFGHANISTAN USING GEOGRAPHIC INFORMATION SYSTEMS

Michael Scott Zibell

This work is a proof-of-concept for employing geographic information systems (GIS) in aviation planning. It provides humanitarian organizations with the means to evaluate Afghanistan for light aircraft operations based on the geographic attributes of the country.

This research integrates the geographic factors pertinent to light aircraft operations in Afghanistan. Geographic, airfield, and climate data are the three primary types of information contained within this study. The written portion of this work provides a thorough review of Afghanistan's physical geography and is presented along with background information on human, political-military, and transportation geography. Airfield data includes runway locations, lengths, elevations, orientations, and surface types. The weather and climate data includes regional and seasonal summaries, as well as limited, station-specific data. All three primary data types are fully integrated by means of the ArcInfo and ArcView GIS software programs.

This study provides a tool for individuals making strategic decisions regarding the use of light aircraft for humanitarian assistance in Afghanistan. It is not intended for use in operational flight planning. The methodology portion of this work is written to facilitate the replication of procedures for any country in the world. Techniques for the use of this project, a sample application, and possibilities for further development are also detailed for the user.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Benjamin F. Richason, III, Chairperson

GERONTOLOGY

MEDICARE REIMBURSEMENT CHOICE: A CASE STUDY OF DECISION MAKING IN A SMALL HEALTH MAINTENANCE ORGANIZATION

John Aspholm

This thesis is a case study of River Rock (pseudonym), a small Health Maintenance Organization in rural Minnesota and describes the factors which influenced its choice of reimbursement strategy for its Medicare population. Late in 1996, River Rock examined the benefits and drawbacks of two reimbursement options; a Medicare risk contract and Medicare Select, a supplemental insurance policy.

Data were collected through interviews, examination of archival and published reports of River Rock, and the documents and statutes related to government regulatory procedures for the two viable reimbursement options. Review of these data sources provided a means for discovering the factors which were central to River Rock's executive decision making process.

Economic security was identified as the key component in River Rock's choice of Medicare Select as its reimbursement option. Education of enrollees, administrative resource strain, marketing effort and compatibility with the prevention philosophy of managed care were also identified as factors in the decision making process.

The findings of this case study give insight into the factors which affected one small HMO in its choice of Medicare reimbursement. Future studies in this area should include a component which seeks to refine these variables and determine whether they are relevant for other small HMOs in Minnesota.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Eleanor M. Stokes, Chairperson

SISTER-SISTER SOCIAL SUPPORT IN LATER LIFE

Mary J. Bauer

Sibling relationships, because they usually last a lifetime, are one of the most enduring ties we maintain. Through their shared history, sisters and brothers have the potential to be a viable source of emotional support for each other

in later years. The role sisters play in each other's lives may be particularly relevant in light of recent demographic trends in the United States: Women can expect to live longer than men and as a result may become interdependent upon each other for emotional support.

This study's primary focus is on the importance of various forms of social support among aging sisters. It was presumed that some aspects of social support are more highly valued by sisters than are others. Given this presumption, it was also believed that certain types of support are desired, but not always received.

The sample for this research consisted of 54 women who were over the age of 60 with at least one living female sibling. The participants responded to general questions about the nature of sisterly social support and closeness. They were then asked to rank the importance of specific aspects of support with regard to their sister and whether they now-received that form of support.

Overall, findings indicated most respondents feel close to their sisters and are generally satisfied with the social support they receive from them. Of particular importance, however, are those aspects of support which take place within the family context: Sharing reminiscences and connecting to family. Most of respondents feel they received adequate amounts of such social support.

APPROVED BY RESEARCH COMMITTEE: MAY 1998

Rona Karasik, Chairperson

DEVELOPING A MODEL FOR ALTERNATIVE HOUSING AND PROGRAMS FOR OLDER AFRICAN AMERICAN WOMEN

Betty A. Bush

PROBLEM: With the growing number of older adults, especially older women, there is a need to develop affordable housing alternatives. Older women are more likely to be poor, to spend a higher proportion of their income on housing, to be subjected to institutionalization. They also often prefer not to live with their children. There is a need to develop appropriate alternative housing arrangements, enabling women to remain active in their communities and independent.

PURPOSE: The purpose of this study was to learn from social workers and older African American women: what women want in housing; how the housing arrangement should be designed; essential features; and activities women define as essential.

FINDINGS: Thirty-six older African American women and 10 Ramsey County social workers were surveyed in order to learn their perceptions of what potential residents might prefer so far as housing and supportive activities are concerned. The preferences of older African American women and the perception of social workers were compared.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Linda Havir, Chairperson

BARRIERS AND MOTIVATORS PERCEIVED BY OLDER PERSONS TO COMPLETING ADVANCE DIRECTIVES

Michele M. Carroll

PROBLEM: This study examined factors related to living will creation and the older adult.

PROCEDURE: Seventy eight participants (ages 55 to 85) were surveyed at a local senior center regarding their attitudes and behaviors toward the creation of living wills.

FINDINGS: This study revealed that the barriers and motivators to creating a living will are quite complex. Less than half of the respondents had created a living will, yet most indicated they had thought about it. Some had discussed living wills with their physicians, although more had talked about them with their families. Demographic factors such as living arrangements seem to be related to living will creation (with those living alone being more likely to create one). Logistical concerns, procrastination and attitudes and beliefs regarding living wills were also found to be associated with creation, while concerns regarding death did not seem to be significantly related in this study.

APPROVED BY RESEARCH COMMITTEE, MAY 1997
Rona J. Karasik, Chairperson

EFFECTIVENESS OF ASSISTED LIVING UNDER MINNESOTA'S HOUSING WITH SERVICES ACT: RESIDENTS' COMPREHENSION AND SATISFACTION

James F. Dostal

Assisted living is a relatively new and growing concept in housing for older adults. In Minnesota, assisted living is regulated under the Housing with Services statutes, where the resident enters into a contractual arrangement with a housing provider for health for health and personal care services. The current study sought to evaluate how well the assisted living concept is working Minnesota under the Housing with Services Registration Act. The primary focus of this exploratory study was on tenants' comprehension of and satisfaction with their current living arrangements. Using a qualitative research design, thirty residents from in six housing with services establishments in central Minnesota were interviewed regarding how they came to live in their present service facility, their understanding of their understanding of their service contract, and their satisfaction with their living environment.

Findings from the current study suggest that the older adults moved to Housing with Services establishments from their own homes or an apartment predominately for safety and health reasons. Many had family members involved in making the decision to move. In general, residents were aware of the costs of their Housing with Services, but were unaware of the consumer protections in their contract. Overall, however the current study found that participants were satisfied with their residences. Key drivers of their satisfaction included safety for health reasons, social interaction, and autonomy.

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Rona Karasik, Chairperson

SPIRITUALITY IN THE LIVES OF OLDER ADULTS: A RURAL PERSPECTIVE

Connie M. Feig

The role of spirituality in the lives of older adults in rural Minnesota was the focus of this study.

A pilot study extending Fowler's (1981) research on life satisfaction and faith development tested whether spiritual expression affected the level of satisfaction in later life.

Findings suggested the respondents perceived a distinction between the practice of religion and an internal sense of spirituality.

The present research, using a larger sample, assessed the life satisfaction of the respondents in relationship to their faith, and tested the pilot study findings.

The "Life Satisfaction in the Elderly Scale" (LSES) created by Salamon and Conte (1992) was used to measure life satisfaction. Scales were created to measure Religious Behaviors and Spirituality (RB/S) using items

from a study by Koenig, Kvale, and Farrell (1988) which addressed religiosity and new items created to address spirituality.

In addition to the survey, open ended interview with a sub-sample of the survey population were conducted to identify elements of spirituality which might not be tapped in the survey instrument.

Findings include a low correlation between health and daily activities, meaning, goals, mood, self concept, and social contacts. There was no correlation between health and finances, religion behaviors and spirituality. A definite difference between religious behaviors and spiritual beliefs was identified. While practicing forms of religious behaviors show little impact on life satisfaction, there is a high correlation between life satisfaction and spirituality.

Interviews supported the finding in the survey; older men and women in the research differentiated very clearly between religious behaviors and spiritual meaning. In contrast to literature that argues that life satisfaction can be defined without religious behaviors and spirituality, this research shows new evidence these components are clearly a part.

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Eleanore M. Stokes, Chairperson

ALZHEIMER'S DISEASE CAREGIVER SUPPORT GROUPS: STRUCTURE, FORMAT, AND PERCEIVED BENEFITS

Erin Marie Jensen

With no current cure for Alzheimer's disease, one of the most important treatments is support for the care givers. Considerable research has confirmed the potential for burden in providing care to persons with Alzheimer's disease. Participation in a support group is one way that a care giver can receive needed assistance.

Despite possible benefits, however, support group attendance can be very unstable. Little research has focused on the dynamics of support group attendance. The current study sought to examine participants' perceptions regarding their usage of care giver support groups. In particular, this study explored the relationship between support group leadership style, primary support group objective and members perceived benefits to attendance.

Support groups were identified from lists obtained from the Alzheimer's Association. Of the 50 support groups contacted, support group leaders from 24 (48%) responded. In addition to these responses, there were 113 responses from support group participants.

T-tests, Duncan post-hoc analysis, and ANOVA's were used to analyze data. Results indicated that support group members of co-led support groups perceived participation in a support group to be significantly more beneficial than members of professionally led support groups in four areas: feeling less isolated and alone, gaining a better sense of knowledge as a care giver, learning new care giving skills and techniques, and gaining information about health and social services. In addition, analysis revealed support group members attending a support group in a non-metropolitan area found support group attendance more beneficial than metro support group members in three areas: feeling less isolated and alone, getting information about legal and financial resources, and learning new care giving skills and techniques.

Findings from this research suggest that care givers will perceive support group attendance to be more beneficial if the support is co-led. This study also provides support group leaders, in non-metro areas, with valuable information concerning what aspects of support group attendance are more beneficial to members. Taken as a whole, results of this study can help support group leaders structure a support group that their members will find most beneficial.

APPROVED BY RESEARCH COMMITTEE: NOVEMBER 1997

Rona J. Karasik, Chairperson

PERSONAL COMPETENCY AND CULTURAL NORMS: A CASE STUDY OF INTEGRATING SENIORS WITH DEVELOPMENTAL DISABILITIES INTO A SENIOR CENTER

Barbara A. Kuhlman

This is a case study of a small group of seniors with developmental disabilities who participate in leisure activities at a senior citizen center. Spatial and social arena provided the backdrop for this study. Identified are the cultural codes of the host community, the cultural styles of the seniors with developmental disabilities, the influences of staff in facilitating acceptance and inclusion of the seniors with developmental disabilities.

Although the typical model for assessing a developmentally disabled client's social skills have been based on intellectual ability, this research argues that the cultural codes of the host community, whether implicit or explicit, must also be examined. Using a combination of participant observation techniques and Greenspan's 1987 social competency index, factors affecting the social acceptance of persons with developmental disabilities in this setting were found. 1) Clients with the ability to identify cultural codes, and respond appropriately, were more likely to be accepted by the members of the host community in activities of the center. 2) Staff act as "cultural brokers" in the environment, serving as the bridge from isolation to participation in the community. They facilitate acceptance, and hasten normalization. 3) Staff assessments of a disabled client's social skills bears on the extent to which a client will be integrated. Further, the significance and function of friendship within the group of developmentally disabled clients and as a marker of successful integration into the center are discussed.

This study concludes with suggestions for further study. These include: Wider application of the social competency index in integration studies; reconsideration of the philosophy and construction of retirement for this population so as to include the exploration of self and community; investigation of the value and importance of work and the values and patterns of friendship for the elder with a developmental disability.

APPROVED BY RESEARCH COMMITTEE: NOVEMBER 1997

Eleanore Stokes, Chairperson

THE EFFECT OF CHRONIC ILLNESS ON LIFE SATISFACTION IN AGING WOMEN RELIGIOUS

LaVonne Schackmann, O.S.F.

The current study sought to explore the relationship between having a chronic illness and subjective reports of life satisfaction among one relatively understudied group, aging Women Religious. Ninety Women Religious between the ages of 60 and 75 years formed the sample. Eighty-one percent had a chronic illness. However, most (91%) listed themselves in good or excellent health.

A survey was sent to the participants in the mail to gather demographic and life satisfaction data. Fifty-seven participants were also presented with a global life satisfaction and asked to list the five factors they felt had the greatest influence in their life satisfaction.

Several findings emerged. A positive correlation was discovered between perceived health and life satisfaction with better health corresponding with greater satisfaction. While the correlation was not strong, it was statistically significant. The presence of a greater number of chronic illnesses also correlated weakly with lower life satisfaction. The strongest effect discovered, however, was that of education on life satisfaction with satisfaction tending to increase as level of education increased.

Of the Sisters (N=56) who responded to the global life satisfaction question, 67% described themselves as "satisfied" or "very satisfied" with their lives. These Sisters listed several factors as influencing their life satisfaction: family and friends, Faith and religious practice, Religious Life itself, personal characteristics, ministry or work, education and enrichment opportunities, and health.

The study revealed aging Women Religious as quite satisfied with their lives. The presence of chronic illness and lower health status, however, did appear to diminish life satisfaction in this population.

APPROVED BY RESEARCH COMMITTEE: MAY 1998

Rona Karasik, Chairperson

A COMPARISON OF MATURE AND NON-MATURE CAMPERS IN MINNESOTA

Catherine A. Norman

It is estimated that by the year 2000 there will be 59 million people 55 years and older. By the year 2010, this population is expected to grow to over 74.8 million. The growth rate of individuals 55 years and older between 1990 and 2010 is expected to exceed those of younger segments of the population. This population shift has made the mature pleasure traveler one of the most attractive target markets for tourism businesses and recreation providers. According to the U.S. Travel Data Center, 5% of individuals 55 years or older used campers, recreational vehicles, trailers or tents while traveling. However, very little is known about the characteristics of the mature camping market. It is the goal of this thesis to examine the mature camping market and to identify and describe the unique needs, interests, and behaviors of mature campers.

The research question addressed in this thesis was: How do mature campers differ from younger adult campers? The objective of this research was to compare mature campers (55 and older) with campers under 55 years with respect to sociodemographic characteristics, past camping experiences, trip characteristics, travel decision-making, facilities, features, and services desired at a campground, camper group activities, camping expenditures made for this trip, and campground satisfaction. Data was used from a comprehensive study of Minnesota's camping industry conducted by Michigan State University during the summer of 1990. The Minnesota Camping Market Study found that 19.6% of the registered campers were 55 years and older and represented over 27.3% of camper nights in Minnesota in 1989.

Results of the analyses comparing registered campers 55 and older with registered campers under 55 lend strong support for concluding that mature campers do differ significantly from non-mature campers. Seven out of the eight null hypotheses formulated for this study were rejected and one was partially rejected. The research analysis revealed that there were significant differences in sociodemographic characteristics, past camping experiences, trip characteristics, travel decision-making, facilities, features, and services, camper group activities, and camping expenditures of mature and non-mature campers. Only campground satisfaction was found not to differ dramatically between mature and non-mature campers. The study found that mature campers are unique in their travel needs, preferences, and behavior and require special attention by park, recreation and tourism providers. This research and analysis provides greater insight into the mature camping market. It is hoped that this information will assist Minnesota's campground industry in providing opportunities and experiences that meet those needs.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Linda Havir, Ph.D., Chairperson

HISTORY

COLIN FRANCIS MACDONALD: A VOICE OF ACCOMMODATION IN THE GERMAN AMERICAN COMMUNITY OF STEARNS COUNTY, MINNESOTA, 1875-1919

Patrick M. Daniel

Summary:

This thesis utilizes the editorialship and life of Colin Francis Macdonald as a means to study the German Catholic community of Stearns County, Minnesota, between the years 1875-1919. Macdonald's stewardship of the St. Cloud

Times occurred during an era of American history that witnessed great waves of ethnic migration into America. A significant element of this migration was the arrival and impact of the German community in Stearns County. This thesis explores how the Catholic Church influenced ethnic settlement, and the role of the Church in the pace of ethnic assimilation or Americanization. It explores how the German Catholic community used the political system as a means of cultural defense, and the issues raised by nativists concerning the loyalty of the German Catholic community. As a Catholic editor who espoused Democratic Party principles, Macdonald was in a unique position to respond to these various issues, and his life can serve as a medium through which to examine these issues within this community.

APPROVED BY RESEARCH COMMITTEE: AUGUST 1997

Susan Rugh, Chairperson

AN ANALYSIS OF PANTOWN-ON-THE-MISSISSIPPI: A QUASI-MODEL COMPANY TOWN

John S. Gutteter

Pantown-on-the-Mississippi, located in St. Cloud, Minnesota, is a collection of homes built to house employees of the Pan Manufacturing Company. This study includes a brief narrative of Samuel Pandolfo and the Pam Manufacturing Company followed by an analytical section that compares Pantown to other model company towns while specifically addressing urban planning, employee welfare and labor issues plus an analysis of relationships between Pantown and other model company towns to place Pantown in historic content.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Don Hofsommer, Chairperson

A HISTORY OF THE MINNESOTA CORRECTIONAL FACILITY, ST. CLOUD

Michael J. Hargesheimer

The Minnesota Correctional Facility is a very important historical facility located in the city of St. Cloud, Minnesota. It opened in 1889 and contains many historically significant aspects, such as being constructed by inmate labor and being surrounded by one of the longest prison walls in the world. When the reformatory opened, it was considered one of the "trend-setters" within the modern prison systems in the United States.

Reformatories throughout the country all contained similar ideals and expectations in which to reform their inmates. The rules and regulations that these institutions followed were based upon society's ideals and perceptions. The reformatory in St. Cloud was originally designed to reform first offenders between the ages of sixteen and thirty through vocational training, education, and moral instruction. The most important aspect of the rehabilitation programs was to reform the inmates in order for them to succeed outside the walls of the institution.

In my thesis I sought to provide a thorough and comprehensive study of the facility that ranges from the construction of the facility from 1889 to 1934; construction that took place from 1964 to the present; defining and interpreting the reform process within the St. Cloud facility and how it evolved over the years; and to how the reformatory's reform process coincided with the reformatory trends in the rest of the nation.

APPROVED BY RESEARCH COMMITTEE: MAY 1997

Don L. Hofsommer, Chairperson

CAMP RIPLEY 1937-1945

Lisa L. Nuehring

Fort Ripley, on the banks of the Mississippi River just North of Little Falls, Minnesota was important to the development of Minnesota in the late 1800's. With the reorganization of the National Guard in 1920, Camp Ripley was developed on the ruins of the old fort. Camp Ripley played an important role throughout the 1930's and 1940's in developing American's military preparations for World War II. Camp Ripley hosted two joint maneuvers, in 1937 and in 1940 which provided important information on the use of new military technology and provided valuable military training for soldiers. With the outbreak of war, Camp Ripley was again an important troop training and hospital site. Camp Ripley became a vital part of the nation's war effort, just as Fort Ripley had been to the development of central Minnesota.

APPROVED BY RESEARCH COMMITTEE; MAY 1998

Edward Gambill, Chairperson

AN ANALYSIS OF POPULAR REACTION TO CIVIL WAR CONSCRIPTION IN THE STATE OF MINNESOTA

David A. Omerza

FINDINGS:

During the Civil War, protests against the newly instituted federal conscription program occurred which were almost as violent as the war itself. Of all the areas of the country to encounter such resistance to the draft, New York City is the most famous. Here issues such as commutation and the bounty system combined with existing problems between native and foreign born residents to form the explosive draft riots of July 1863. But how did the people of Minnesota respond to the new federal conscription program?

Following passage of the Conscription Act cries erupted that portions of it were "class legislation;" other citizens argued that the federal government could not expect to enforce a "perceived" unconstitutional act. In several Minnesota newspapers attacks and counter-attacks quickly followed over the conscription act. Yet, no mass, organized resistance to the government's efforts to enroll and draft men into the service occurred in Minnesota. Those opposing the government's conscription plan used peaceful, constitutional means to voice opposition against the Conscription Act. Public reaction to conscription rapidly changed in Minnesota following the publication of accounts regarding the draft riots in New York City. Many of the Democratic supporters in the state originally opposing the draft quickly moderated their opinions. Local Democrats seemingly wanted to avoid any association with those held responsible for the riots in New York City--individuals linked to the Democratic party generally.

After examining information regarding the public's attitudes on the draft, two conclusion materialize. The first is that government officials and ordinary Minnesotan's differed over many common draft issues such as commutation and the bounty system. The second is that even though people accepted the need for a draft, they still wished to avoid it if possible.

What was the average Minnesotan's response to conscription? This thesis asserts that Minnesotan's response was distinctive in that it was overtly peaceful. Minnesotan's response was aided by deliberate actions and pleas made by several local newspaper editors and state leaders to the population to use the available, legal means to express any displeasure with this act. From this, Union Leagues and Peace Meetings developed, crystallizing these requests. Minnesotan's distinctive response was reflected in speeches and resolution at their several forums. While these two organizations are not unique to Minnesota, they were the primary means used to voice public opinions regarding the federal conscription act.

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Don L. Hofsommer, Chairperson

SPECIAL STUDIES

FOREIGN PRICE SECTOR AND U.S. INFLATION: AN EMPIRICAL INVESTIGATION

Shahzad Ahmad

Changes in economic variables such as import and export prices can have a significant impact on a country's rate of inflation. The United States experienced a major sustained inflation in its history during the 1970s. Although domestic money supply grew at an average rate of 2.6% in the 1950s and 6.4% in the 1970s, there are still other explanations than the monetary one such as a cumulative effect of the foreign sector.

The domestic demand function is controlled by domestic and foreign impulses and consist of monetary and real factors. Domestically, such factors include money supply growth measured by M1 and real output growth measured by GDP. Externally, exchange rates and international aggregate supply shocks can be viewed as factors controlling the demand function. Cost-push foreign impulses are usually transmitted via import prices.

Fosu (1983) used data 1948:1-1977:4, to demonstrate that foreign sector prices provide direct signals for domestic prices. In his study, the time period 1948:1-1972:4 is considered as PRE-OPEC era during which world currencies were linked to a fixed exchanging rate.

In this study, Fosu's framework was used as a baseline to re-examine a price equation which can demonstrate the relative predictive power of the foreign sector on the domestic prices, and thus the rate of inflation in the U.S. This study uses quarterly data 1960:1-1991:4. This period contains many significant world events such as the Vietnam War, major oil crises of 1973 and 1979, end of the cold war, and major political and military conflicts in the Middle East.

The findings presented in this study demonstrate that the U.S. international sector, defined to include the export as well as import sector, continues to be a major determinant of the rates of inflation. This phenomenon holds true in the 1970s as well as in the 1980s. Furthermore, the relative size of the import sector contributes significantly to the domestic price behavior.

APPROVED BY RESEARCH COMMITTEE: JULY 1997

Masoud Moghaddam

GIRLS AGES 9-12 AND PARTICIPATION IN SPORT

Kevin Edward Babcock

The purpose of this study was to determine reasons for girls participating in sport and what motivates 9-12 year old girls to continue in athletics. The ability of the questionnaire to assess girls's participation and their fun in sports was done by administering a questionnaire with 9 questions to girls ages 9-12.

One hundred twenty-seven girls 9-12 volunteered for the study. Ninety-three of the 127 had parental consent and the remaining 34 participants were given the consent of camp directors to complete the questionnaire. The questionnaire was distributed among three girls' summer basketball camps in Minnesota. Complete confidentiality of all subjects was provided throughout the entire study.

The results of the survey showed girls ages 9-12 are having fun participating in sports. However, there is a definite showing of girls not having un in sports. These signs showed up when they answered the abuse section of the survey. Abuse was not always prominent per se from the coaches, but it definitely showed up indirectly. The participants in this study showed an astounding 52% of the total abuse responses came from the other team and another 26% said they received teammates. A Chi Square test was used to compare fun, friends, and health between

the age groups. The statistic was nonsignificant at the $p < .05$ level which compared all three groups among one another to see if the likelihood of one group falls into the observation of another group. As a result of the study, the following conclusions can be stated: (a) the coaches of girls ages 9-12 have a great impact on the attitude of participation, (b) girls's are having fun in sports, and (c) girls, ages 9-12 are recognizing that girls can play sports.

APPROVED BY RESEARCH COMMITTEE: FEBRUARY 1998

Robert G Waxlax, Chairperson

ANALYSIS OF THE QUALITY OF AUDIO DATA RECEIVED IN REAL TIME OVER NETWORKS

Michael D. Bauer

The ever-increasing demand for sophisticated multimedia content on the World Wide Web has resulted in the rapid development of new kinds of network application: real-time audio tools. "Voice-on-the-net" applications allow users to use the Internet as the medium for telephone-like voice communication; "audio-on-demand" applications facilitate the "streaming" of audio data, a process which involves downloading an audio file in such a way as to permit its being played as it is received.

How, though, does one distinguish one such application from another? How can the sound quality of audio received in real time over a network be objectively compared to the sound's source? If a real-time audio application employs compression, how does one separate compression effects from network effects when analyzing the received sound?

Spectral analysis, which involves using fast Fourier transforms to break a sound into its component frequencies, provides a tool for objectively comparing aural data. The study described herein presents a method of applying spectral analysis to the comparison of audio data files transmitted and received over a network using a variety of compression methods and under different levels of network traffic. By examining each file before compression, after compression, and after transmission over the network, the effects of compression and network traffic will be isolated and compared.

It is the author's intention that this method (or some version of it) might be used both to "benchmark" the performance of real-time audio applications and to lend insight on how they work.

APPROVED BY RESEARCH COMMITTEE: AUGUST 1997

Dennis Guster, Chairperson

IN THE INTEREST OF NATIONAL SECURITY

Daniel J. Becker

On April 3, 1996, an American Air Force plane crashed in Dubrovnik, Croatia killing everyone on board, with the exception of one survivor who died en route to Split (Croatia) medical clinic. The 35 people killed represented twelve large U.S. Corporations, the C.I.A., the U.S. Treasury, the U.S. Commerce Department, the New York Times, the U.S. Military transported by the U.S. Air Force, an interpreter, and a photographer.

PROBLEM:

This paper will provide the historical and political background necessary for understanding the circumstances surrounding the plane crash and subsequent distortion of information by the various institutions involved: The United States Military, The United States Government, The Croatian Government, and the United States media. This project is an in depth investigation into the veracity of the public reports (government and media) about the rash of an U.S. Air Force plane on April 3, 1996 in Dubrovnik, Croatia.

PROCEDURE:

Through a literature review of Croatian and U.S. relations, this paper will look at what the related issues are regarding the United States military industrial complex, and the history of national security issues specifically in the relationship between the two countries. This paper will be using a qualitative methodology and the conflict theoretical perspective. Through the data collected this paper will be looking at the level of reality not highlighted in the mainstream media.

FINDINGS:

Through critical research of the literature and data collected this paper will analyze how Croatian national security, U.S. national security, and the U.S. military industrial complex played the decisive role as they provided the conditions for the plane crash. The findings of this research suggest that "Pilot error in bad weather" wasn't the actual cause which was what the American people were originally lead to believe.

CONCLUSION:

After having analyzed the relevant literature and data I have found significant evidence to support the hypothesis that the plane did not crash simply due to pilot error. The decisive conditions which caused the plane crash were not covered by the mainstream media. This paper supports the conclusion that the level of reality covered by the mainstream media was construed at the crash site by the Croatian National Guard due to the higher priority of Croatian National Security. This paper also supports that it was the best interest of U.S. National Security to Condone that construed level of reality.

Through this critical research thesis project I have found that the related issues behind Croatian national security, U.S. military industrial complex, were the combined cause for the crash. They were the combined cause for the deaths of 35 human lives. Although this tragic accident so quickly faded in the minds of mainstream America, it needs to be rewritten in the history books as an international conspiracy. Not enough evidence has been collected to suggest a conspiracy took place prior to the crash, but this paper provides significant evidence to support the possibility that an international conspiracy took place after the crash to cover up the actual cause.

APPROVED BY RESEARCH COMMITTEE: MAY 1998

Julie Andrzejewski, Chairperson

FACULTY MEMBERS WILLINGNESS TO PROVIDE ACADEMIC ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Tammy Becker

PURPOSE:

The purpose of this study was two-fold: to investigate the willingness of individual faculty members to provide academic accommodations for students with disabilities and to explore the felling of individual faculty members regarding academic accommodations.

PROCEDURES:

In-depth interviews were conducted with each participant. The participants wrere randomly selected from a list of faculty members who had been identified through the universities' student disability service provider. To establish the willingness of faculty members to provide academic accommodations for students with disabilities, the in-depth interview questions were organized into the four following categories: instructional accommodation, assignment accommodation, examination accommodations, and special assistance accommodatins.

The data organized using symbols to depict the willingness; reluctance; and unwillingness of each participant to provide academic accommodations. Tables are used to display the data along with a narrative explanation of the data findings.

RESULTS:

Analysis of the data found that university faculty members are generally willing to provide academic accommodations for students with disabilities particularly in the area of instructional accommodations but less willing to provide assignment accommodation. The categories of examination accommodations and special assistance accommodations revealed that faculty members are apprehensive of situations they believe could foster opportunities to alter a students's own work, such as the use of proctors.

CONCLUSIONS:

The findings cited in this particular study imply that faculty members prefer student who are willing to self disclose and aggressively pursue their edcational success. Also, the findings clearly displayed the desire of faculty members for training in how to best accommodate students with disabilities.

APPROVED BY RESEARCH COMMITTEE:

Steve Hoover, Chairperson

TEACHING COMMUNICATION SKILLS: ARE WE MEETING THE NEEDS OF BUSINESS AND INDUSTRY? A SURVEY OF EMPLOYERS OF RIDGEWATER GRADUATES.

Julie Ann Lindstrom Bredeson

The purpose of this study was to explore what employers of Ridgewater College graduates consider to be important communication skills when hiring and when promoting personnel and to determine if current communication curriculum at Ridgewater College is conducive with meeting the expectations of employers of Ridgewater College graduates.

PROCEDURE:

This study used the survey research method and the examination of current college communication curriculum and objectives.

A review of literature focusing on the relationship between current communication course objectives and employer expectations offered support for such a study.

By analyzing survey results and creating a comprehensive resource focusing on what employers feel are important communication skills, this study has allowed Ridgewater College communications instructors access to information conducive to communication course curriculum development.

FINDINGS:

The findings suggest that to better meet the expectations of employers of Ridgewater College graduates, future curriculum must continue to emphasize present communication objectives, and strive to enhance learner outcome requirements for skill development in the areas employers targeted as most essential-the areas of listening, reading, and writing.

APPROVED BY RESEARCH COMMITTEE: AUGUST 1997

Art Grachek, Chairperson

COMPARISON OF PERCEPTION OF QUALITY OF LIFE IN PATIENT WITH CORONARY ARTERY DISEASE AND PERIPHERAL ARTERY DISEASE

Wendy A. Pederson Brown

The purpose of this study was to compare the perception of quality of life of those who participated in a cardiac rehabilitation program with those who participated in a vascular rehabilitation and those who chose a home exercise program. The McMaster Health Index Questionnaire (MHIQ) consists of statements pertaining to physical, social and emotional perceptions of one's life. The MHIQ was administered via telephone to a total of 40 participants. Subjects were matched by age, gender, working status, major risk factors, recent stressors and disease process and placed into one of the four groups. The four groups (n = 10) were as follows: 1) diagnosed with CAD who participated in cardiac rehabilitation; 2) diagnosed with CAD who participated in a home exercise program; 3) diagnosed with PAD who participated in vascular rehabilitation; 4) diagnosed with PAD who participated in a home exercise program. Scales for physical function, social function and emotional function were assessed, scored, and standardized to an index value from 0.0 (extremely poor function) to 1.0 (extremely good function). Data were analyzed using Chi-square ($P < .05$). Perception of quality of life was not different between groups. There were no differences between perceptions of physical function, social function or emotional function. These data suggest that there is no difference in perception of quality of life of those who participate in a cardiac rehabilitation program with those who participate in a vascular rehabilitation program and/or those who chose a home exercise program.

APPROVED BY RESEARCH COMMITTEE: AUGUST 1997

David Bacharach, Chairperson

CROSS-CULTURAL EDUCATION: THE UNITED STATES AND JAPAN

Julie J. Nordine Condon

SUMMARY: This thesis seeks to meet James H. Robinson's (1991) call for writings on specific cultures within academic contexts. Japanese comprise one of the largest groups of foreign students attending U.S. universities today. Because it is often the job of ESL instructors to prepare these and other foreign students for university classes academically and culturally, it is necessary for these instructors to be aware of cultural differences in learning styles and school environment experience. Methods of cross-cultural comparison are reviewed and applied to Japanese culture with specific examples from the literature.

PROCEDURE: Ethnographic research was carried out using Japanese students as informants of their own academic culture as suggested by Furey (1986). The methods used were primary ethnographic interviews, participant observation and videotaping of an ESL reading class, and ethnographic interviews with a second group of students. The study sought to ascertain what contrasts between the Japanese and American academic culture were the most serious or memorable and what preparation students had for these contrasts. A secondary goal was to investigate students' familiarity with the term *haragei*.

FINDINGS: The main academic differences between Japanese and U.S. classrooms identified by the students were class discussion, group work, and disagreement with the instructor. U.S. instructors of Japanese students need to be aware of these differences to guide Japanese students to be successful in the U.S. classroom. Secondary findings from the study were that *haragei* is not a familiar cultural term to college-age Japanese. In addition, it was decided that those students who had arrived from Japan within eight months were better informants of their culture. After that point, the students began to assimilate to the U.S. classroom and cultural differences became less defined.

APPROVED BY RESEARCH COMMITTEE, AUGUST 1996

James H. Robinson, Chairperson

SMOKELESS TOBACCO EFFECTS ON BATTING ABILITIES AND PSYCHOMOTOR TASK PERFORMANCE OF MALE BASEBALL PLAYERS

Mary Jo Donovan

This study investigated the effects of smokeless tobacco (ST) on batting abilities and psychomotor task performance of baseball players. Twenty male baseball players, nonusers (n=11) and habitual user (n=9), ages 18-37 years old volunteered to participate in two separate testing sessions, one session with ST and one without ST. To account for order effect, half the nonuser and half the user group were randomly selected to receive ST on the first testing day while other subjects received the ST on the second testing day. After a 5 min baseline resting heart rate and blood pressure were taken from each subject in the seated position. During the ST trial, the subjects were given a premeasured, wrapped dosage of ST and asked to sit for an additional 5 min to allow the nicotine to begin to enter the bloodstream. There were three stations of the psychomotor tasks: modified Bassin anticipation timer test anticipation time, a Jug's pitching machine to test batting abilities and pursuit rotor to test hand-eye coordination. Equal number of subjects were started at each station and the tasks were performed in the same order on each testing day. Data were analyzed using a 2(group) x 3(task) repeated measures ANOVA ($p < .05$). There were no significant within-group or between differences noted. Although not statistically significant, there was a tendency for users of ST to group experience a decrement in psychomotor task performance in the non ST trial. These results suggest withdrawal symptoms of individuals with potential nicotine addiction. There is no performance enhancement with ST for users or nonusers for pursuit rotor, anticipation timing and batting abilities.

APPROVED BY RESEARCH COMMITTEE, MAY 1994

David Bacharach, Chairperson

COHERENCE: DISCOURSE COHESION AS MEASURED IN TWO SETS OF STUDENT ESSAYS

Rachel Fischer

Two language groups were compared on a combining test directing them to transform short choppy sentences into cohesive English text. One of these university groups resided and learned the English language in Tianjin, China. The other group resided and acquired their native tongue in the United States. Several sequencing devices were researched following the advice of other researchers in the field. Hypotheses asserted that the native speakers would clearly demonstrate their advantage. The results showed no appreciable difference in performance between the two groups as to the use of those sequencing devices. Following the research of others who used this instrument to measure competency, the study was extended to include mean lengths of sentence components. Again the group results were nearly the same. What caused an observable difference to emerge was vocabulary. The native English speakers used a greater number of initiated words. The Chinese students tended to use and maneuver only those words given in the instrument.

Coherence has socio/psychological/philosophical characteristics which are said to permeate the very fabric of human civilizations. All written languages probably use devices to link ideas. Some will flow out of casual speech but other links are more apt to be located in written communication. This phenomenon may in part explain the several conclusions and implications arising from this study. Other languages were not tested, but we can say that the Chinese and American languages both have many explicit words used to sequence. Each language uses implicit devices to indicate relationship between one idea and another, but these devices are not analogous to both cultures. They seem to be bound to the individual culture where they are employed. Educational methods differ in the two cultures and might explain the observable differences in the working vocabulary. Why the SCSU students did not exceed the Chinese learners in the use of sequencing devices is more difficult to explain.

APPROVED BY RESEARCH COMMITTEE, JULY 1996

Donna Gorrell, Chairperson

CENSORED STORIES AND JUNK FOOD NEWS: A CRITICAL EXAMINATION OF THE SHRINKING MARKETPLACE OF IDEAS

John Hamerlinck

Theorists critical of the concentration and economic orientation of mass media corporations have suggested that the ownership patterns result in negative influences on news content. These negative influences, which occur both directly and indirectly, limit diversity in the marketplace of ideas upon which people in a democracy depend to form opinions and ultimately act as responsible citizens.

This internal censorship exerted by economic forces on the press, manifests itself in two important, identifiable ways, the under-reporting or non-reporting of important stories, and the reporting of less substantive stories which act to disengage people from a deeper understanding of the world. These reporting phenomena can be observed and quantified. Therefore, the critical perspective can be tested.

This work contains two original components designed to assess the critical theorists' analyses of news content in the corporate-dominated popular press. The first identifies and categorizes the economic orientation of the reporting sources for all stories from 1976-1995, defined as "censored" by Project Censored at Sonoma State University, in Rohnert Park, California. The mainstream and alternative media are compared based on their frequency as a reporting source. The study overwhelmingly confirms the hypothesis that the mainstream press, is likely to be a source of under-reported stories than the economically independent alternative press.

The second study uses data from the Vanderbilt University Television News Archive to perform a content analysis of the nightly newcasts of ABC, CBS, and NBC television networks for the week of January 5 through January 11, 1997. This study was included as an ethical consideration. It was conducted in an effort to assess the possibility that mainstream news outlets simply do not have the available time or space for the seemingly significant types of stories identified by Project Censored. Of particular interest in examining newscast content was the existence of stories which could be defined as fluff or junk food news. The results show a considerable amount of news lacking in substance. Additional evidence supporting the critical theories also emerged.

The final chapter includes suggestions on what steps can be taken to end this threat to the marketplace of ideas. Public policy approaches are discussed as well as strategies to enhance personal media literacy.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Julie Andrzejewski, Chairperson

A COMPARISON OF THREE METHODS OF MONITORING AND MAINTAINING TARGET HEART RATE ACROSS MODES AND BETWEEN GENDERS

Anne Carol Howes

This study investigated the accuracy of three different methods of monitoring and maintaining target heart rates (THR) across three different modes and between men and women. 15 males and 15 females, ages 18 to 34 years old were randomly assigned to either heart rate (HR) group (n=5 males, n=5 females), rating of perceived exertion (RPE) group (n=5 males, n=5 females), or a control (CTL) group (n=5 males, n=5 females). The HR group was taught how to take their radial pulse and accurately count the number of beats. They practiced this skill during two 15-minute treadmill workouts while comparing their accuracy to a heart monitor. The RPE group was taught how to use the Borg 6-20 RPE scale and how their heart rate (HR) corresponded to a specific number on the scale. They practiced this skill during two 15-minute treadmill workouts, while feedback was given on their actual HR compared with the RPE number they selected. They were then given a RPE range which corresponded to their age-predicted THR. The CTL group was allowed to workout on the treadmill for two 15-minute sessions in order to familiarize themselves with the treadmill. Following the training sessions and familiarization to the treadmill, all three training groups were asked to complete three separate workouts; 15 minutes walking/running on a treadmill, 15 minutes walking/running on the indoor track, and 15 minutes cycling on a stationary bicycle. Each subject did a three minute

warm-up prior to each workout and a substantial cool-down. Each subject wore a heart monitor during each workout and heart rate was recorded throughout all workouts, then downloaded to a computer for analysis. The HR group took their pulse at three minute intervals throughout the tests. The RPE group checked the RPE scale throughout the tests. The CTL group simply picked a comfortable pace which they felt would be within their age-predicted THR. A HR max test was also completed by each subject. Data were analyzed for each mode using three separate 2-way ANOVAs; training group, gender and training group/gender ($p < .017$). A t-test determined significance between age-predicted HR max and actual HR max. There was no significant difference in the amount of time spent within THR between men and women or between the training groups while exercising on a treadmill, stationary bicycle, or on the track. A significant difference was found between age-predicted HR max and actual HR max for both men ($p < .001$) and women ($p < .03$).

APPROVED BY RESEARCH COMMITTEE, FEBRUARY 1997
David W. Bacharach, Chairperson

A COMPARATIVE ANALYSIS OF THE TWO-POINT SHOT VERSUS THE THREE-POINT SHOT IN COLLEGE BASKETBALL

Daniel J. Lenz

There has been very little research done to determine the correct number of three-point shots a team should attempt per game. This study will attempt to shed some light on that question.

The researcher randomly selected over 120 college basketball games and then charted each game. The court was divided into three areas: inside 15 feet, from 15 feet to 19 feet 9 inches, and behind 19 feet 9 inches. The shooting percentage was determined in each of the three areas. The researcher then moved all the shots taken between 15 feet and 19 feet 9 inches and moved the shots either inside of 15 feet or behind the three-point line. Using Chi-square the researcher attempted to find out if a team would be able to score more points, which may lead to more victories.

The research determined that when moving the shots inside of 15 feet the Chi-Square = 2.96, $p < .075$, which failed significance. When the shots were moved behind the three-point line the Chi-Square = 3.65, $p < .06$, which once again failed to be statistically significance. The overall results showed a team could win two or three more games per year with proper shot selection. Moving shots from either area will not statistically change the number of wins of a team.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1996
David Bacharach, Chairperson

CONCEPTS OF 'ANIMAL' HELD BY SEVENTH GRADE STUDENTS IN A RURAL, CENTRAL MINNESOTA COMMUNITY

Kirk M. Lingenfelter

PROBLEM:

The purpose of this study was to determine answers to the following research questions: 1) What concept of 'animal' is held by students in a mid-size, rural, central Minnesota community's public schools? 2) Were student responses to the survey truly representative of student concepts? 3) How do the results gathered by this study compare to the results established in a study previously conducted by Bell in 1981?

PROCEDURE:

The two-phase study consisted of a multiple choice survey and an interview. The survey of seventh grade students (n=454) asked subjects to classify each of eight organisms as an instance if animal or non animal and then to choose 4 of the 26 reasons why they made their choice. The interview of selected students followed the survey. Sixteen students were chosen by stratified random sample. These students were asked to classify the same eight organisms as instances of animals or non animals and then to tell what they made their choice.

FINDINGS:

Data obtained from the survey showed that only 2% of the subjects were able to correctly classify all eight organisms. Twenty-four percent of students were able to correctly classify the same six organisms used in Bell's 1981 study in which 14% of the students were able to correctly classify the same six organisms. The most common reasons given by students to identify animals during the survey were those categorized as movement and breathing. Data from the interview revealed that 25% of the subjects (n=16) were able to correctly classify all eight organisms and 54% were able to correctly classify the same six organisms used in Bell's 1981 study. Ten percent of the subjects were able to correctly classify the same six organisms. The most common reason given for the classification response were, again, movement and breathing.

CONCLUSIONS:

The subjects of this study hold a restricted concept of the word animal. This is supported by the data gathered in the survey and in the interview. The subjects were able to classify organisms more successfully than those in Bell's 1981 study.

APPROVED BY RESEARCH COMMITTEE: DECEMBER 1997

Patricia Simpson, Chairperson

RESPONSE OF DIABETIC CARDIAC PATIENTS TO PHASE TWO REHABILITATION

Caryn A. Locke

The purpose of this study was to compare the pre and post MET levels, Rate of Perceived Exertion (RPE), treadmill exercise time and heart rate (HR) responses between Diabetic (DM) and Non-DM subjects in a Phase Two cardiac rehabilitation program. Data were collected over a one-year period in which the same two exercise physiologist were prescribing the exercise sessions in the rehabilitation program. The DM groups (N=43) and Non-DM groups (N=49) were matched by their cardiac diagnosis: Coronary Artery 7 Bypass Graft (CABG), Myocardial Infarction (MI) and stable Angina (SA). Data were analyzed using MANOVA (P<.05).

For METs, there was no interaction between groups, but there was significant difference between pre and post METs for all groups [Wilks' Lambda, $F(1,74)=188.8$, $P<.00$]. For analysis of RPE, there were no interactions between groups [$F(2,74)=1.05$, $P<.36$] or subgroups [$F(4,74)=1.88$, $P<.12$] which illustrates that all subjects perceived the exercise equally well. There were significant differences in pre to post RPE measures [$F(1,74)=5.98$, $P<.02$] which parallels the increase in METs they completed during the posttest. For analysis of HR, the Wilks' Lambda showed no interactions between groups [$F(2,74)=1.90$, $P<.16$], and a significant difference in pre to post HR [$F(1,74)=26.35$, $P<.00$]. There were a significant difference between groups between subjects [$F(4,74)=3.79$, $P<.01$]. The Type I CABG subgroup did not respond to the exercise training session, but did show HR rate changes from pre to post in the MI and SA subgroups. The Type II had no response to HR changes with training [$F(2,74)=10.86$, $P<.00$], but they did change in METs, Time and RPE: For analysis of time, the Wilks' Lambda reveals a significant difference in pre to post time for all groups and subgroups [$F(1,74)=391.82$, $P<.00$]. There were no interactions between groups or subgroups. There were a significant difference and interaction within the groups [$F(2,74)=3.62$, $P<.03$], revealing that not all groups responded the same. A separate repeated measures

ANOVA for groups by time revealed a significant difference for TYPE I DM between groups [$F(2,74)=10.78$, $P<.00$]. The SA groups entered the program tolerating the most time on the treadmill and exited the program tolerating the lowest.

It can be concluded that all groups improved from pre to post time while in rehabilitation, but the SA participants did not improve as much as the MI and CABG groups.

APPROVED BY RESEARCH COMMITTEE: MAY 1998

David Bacharach, Chairperson

AN ANALYSIS OF AFFIRMATIVE ACTION IN THE UNITED STATES AND SOUTH AFRICA

Sithembele Wiseman Msaseni

This thesis is titled "An Analysis of Affirmative Action in the United States and South Africa." Affirmative action is a controversial and a challenging topic to study because various scholars have provided different interpretations on the subject. This controversy has been experienced in such countries as Britain, India, United States and by the South African government. The origin of this controversial policy in the United States was initiated by 1964 Executive Order 11246, which required all federal branches and agencies to practice "fair employment opportunities" and eliminate discrimination based on race, color, gender, creed or national origin (Graham, 1990, p. 27).

However, it is not the purpose of this paper to provide a generally acceptable definition, rather the point is to acknowledge that there is no universally acceptable definition to affirmative action programs. For this reason I decided to study two countries for a better understanding of the influence, benefits and trend of affirmative action programs in the American and South African societies. Affirmative action in South Africa is a new phenomenon and unfamiliar to millions of South Africans. The new government still has difficulties in convincing thousands in the business community and laypersons about the necessity and urgency of affirmative action policies (Human 1995, p. 28). The Reconstruction and Development Program (RDP) and political events led to the adoption of the RDP during the 1994 elections. It is not the intention of the paper to be too descriptive about affirmative action programs, rather an attempt is made to explain the influence of RDP and affirmative action to the millions in South African and American societies.

The new government is confronted with such problems as democratization, transformation, economic inequalities and integration of old government structures. In the final analysis, the South African government is committed to affirmative action policies, which are enforced through the new Constitution Act 200 of 1993. The inequality which exists is a result of historical demarcation of South Africa to "black homelands" and "self-governing states" and "reserves." The four "black homelands" (Transkei, Bophutatswana, Venda and Ciskei abbreviated as TBVC states) were poor in comparison to what was known as "white south Africa." These TBVC states had their "own puppet administrations." Their budget and financial responsibilities were controlled and regulated by Pretoria. These "black homelands" have been integrated into a unitary South Africa. The these tries to articulate social, cultural, political and economic discrimination and inequalities which have left certain groups economically disadvantaged. The task at hand is to make an analysis of different models of "affirmative action" programs aimed at correcting historical, economic, social, and political injustices.

APPROVED BY RESEARCH COMMITTEE: FEBRUARY 1998

Steven Wagner, Chairperson

AN ANALYSIS OF THE INFLUENCES OF INQUIRY TEACHING ON HIGH SCHOOL CHEMISTRY STUDENTS' LEARNING OF ACIDS AND BASES

Susan M. Midas

PROBLEM: The purpose of this study is to determine if the teaching methodology of inquiry assists in students' understanding of acids and bases

PROCEDURE: The research sample consisted of a collection of senior high first year chemistry students. One section of students, the control group, consisting of fifteen students, was given a pretest dealing with acids and bases. Two days later, they were given a "cookbook" lab to determine which is the better antacid: Tums or Roloids. The other section of students, the experiment group, consisting of nineteen, was also given a pretest, which was then followed by an inquiry lab. Students were to develop a lab and test to determine which antacid was better: Tums or Roloids. Following completion of the labs, all students were then given a post test.

FINDINGS: A pretest posttest gain analysis was conducted on the data obtained. The experimental group had a gain of 5.63 versus a gain of 3.27 for the control group. When students were asked to demonstrate their inquiry skills, the experimental group obtained a total of six correct responses on the pretest and seventeen correct on the posttest; the control group obtained two correct responses on the pretest and six correct on the posttest.

CONCLUSIONS: Teaching by using the method of inquiry assists students in the learning of acids and bases. It is through inquiry that teachers may be better able to create productive, thinking members of society.

APPROVED BY RESEARCH COMMITTEE, MAY 1997

Patricia Hauslein, Chairperson

AN ANALYSIS OF THE RELATIONSHIP BETWEEN STAFF SIZE AND WINNING PERCENTAGE IN NCAA DIVISION II FOOTBALL

Brian E. Miller

This paper studied football coaching staff size and its relationship to a football program's winning percentage. The study surveyed institutions in the North Central Conference and the Northern Sun Intercollegiate Conference that participated in NCAA Division II football. Information was gathered from each institution over the past four years. A decimal coaching equivalency was determined by adding together the percentages of football coaching responsibilities of each staff member. The equivalency was then compared to that program's winning percentage.

FINDING: A positive relationship exists in the study between a football program's coaching staff size and its winning percentage. A Pearson's correlation was found to be significant in this study. The strength of this relationship also improves when excluding staffs in their first and second years with an institution.

APPROVED BY RESEARCH COMMITTEE, NOVEMBER 1996

David Bacharach, Chairperson

A SURVEY TO DETERMINE THE IMPACT OF GENDER EQUITY ON AA HIGH SCHOOL ATHLETIC PROGRAMS IN MINNESOTA

Bruce R. Miller

The intent of this study was narrow the scope and investigate the impact of gender equity at the AA level in the Minnesota State High School League (MSHSL) to more fully understand the current direction of the gender equity movement from the high school perspective.

The survey was limited to athletics/activities directors in AA high schools in the MSHSL.

A questionnaire was utilized as the method of securing data for the study.

The results of this study presented an overall view of AA MSHSL gender equity demographic information for 1996-1997, the impact and current status of gender equity in the high school programs, and how gender equity should be defined in the high school athletics programs.

The study revealed the impact gender equity has had on MSHSL AA high school athletics programs. The athletics administrators surveyed indicated several trends these impacts have created within their programs including the addition and elimination sports, budget considerations, current definitions of gender equity, and their own philosophy regarding gender equity.

APPROVED BY RESEARCH COMMITTEE: JUNE 1997

Robert Waxlax, Chairperson

THE IMPACT OF SOCIAL MARKETING ON BREAST CANCER COMMUNICATION: A THEMATIC ANALYSIS OF HEALTH CARE COMMUNICATION IN THE MEDIA

Maribeth S. Overland

Breast cancer is the second major cause of death in women, yet little research exists that examines the content of the messages that women readers of magazines receive about the disease.

The advent of the women's health movement in the 1960s and early 1970s initiated radical social change in which women demanded greater access to health care information. Historically, women's health messages, specifically those about breast cancer, were communicated from a mechanistic-structural approach. The women's health movement implemented a more holistic-social approach to breast cancer and women's health in general.

This research examined selected samples of three highly circulated popular women's magazines and the New York Times pre- and post- the women's movement during 1964 to 1994.

A textual analysis of breast cancer articles was conducted to examine thematic units characteristic of mechanistic-structural and holistic-social communication. Thematic units are recurring assertions made by communicators such as repeat patterns of ideas.

Significant results were identified in two areas of analysis: 1) an increase in the number of articles addressing the topic of breast cancer during the time period studied, and 2) an increase in the percent of thematic units characteristics of holistic-social marketing communication.

Data indicate there has been both an increase in the quantity and shift in the quality or type of information on breast cancer as presented in the data. The increase in the quantity is substantiated by more than a 250% increase in both the number of articles and thematic units about breast cancer from 1964 to 1994. The data show a less dramatic, though significant, shift away from mechanistic-structural and toward holistic-social marketing in mass media breast cancer messages during the period studied.

Factors contributing to the increase in quantity of breast cancer messages could be: 1) the activism of the women's health movement; 2) a call for more valid research on the topic of breast cancer; 3) a campaign to create a public perception of breast cancer as a political, versus a women's, issue; 4) the aging of the feminist leadership of the women's movement resulting in increased awareness of and personal experience with breast cancer.

Data reveal that while there has been an increase in the percent of thematic units characteristic of holistic-

social marketing, the increase is not nearly as dramatic as the quantitative increase. In light of this discouraging finding, this researcher offers the following contributing factors to this significant, though minimal, qualitative shift: 1) the approaches to breast cancer messages continue to focus on the most common methods of addressing the disease; and 2) the research and practice of medicine, historically and currently, denigrate women's health issues which may, in fact, be caused by institutional medicine maintaining a male-dominated status-quo which exists within a paternalistic hierarchy.

APPROVED BY RESEARCH COMMITTEE: JULY 1997

Marjorie Fish, Chairperson

OUTDOOR RECREATION AS A METHOD OF LEARNING FOR ESL STUDENTS

Regina A. Palis

This thesis is a study involving English as a Second Language (ESL) students participating in outdoor recreation activities. The hypotheses of this study are to determine if students' self-confidence is improved, English vocabulary is strengthened, and if their cultural anxiety is reduced by participating in outdoor activities.

The research included two activities: a three-day camping trip and a two-day hiking trip. Both trips were held in Minnesota. The groups participating were called experimental. Each activity had a control group which were students not participating in the events. All participants were given a pre-test prior to the activity and a posttest after the activity. Personal interviews were also conducted for the experimental camping group one month following the activity.

Experimental and control groups showed little significant difference in the study, as student participation and interest were high for both sets of groups. The personal interviews found that students' anxiety was reduced and new terminology was remembered.

Outdoor recreation programs can be helpful to reduce students' anxiety, especially during their first year in a new culture. Programs need to be developed to meet these needs of ESL students. Once programs are implemented into the curriculum, students could use these opportunities to reduced anxiety, improve their English vocabulary, and improve self-confidence.

APPROVED BY RESEARCH COMMITTEE, FEBRUARY, 1998

James Robinson, Chairperson

THE EFFECTS OF ALCOHOL-INDUCED HANGOVER ON A 30-MINUTE RUN AT LACTATE THRESHOLD

Michael A. Reid

This study observed the effects of alcohol-induced hangover on a variety of performance-related physiological variables (VO_2 , VCO_2 , RER, HR, LA, GLU) and a psychological variable (RPE). Eight male recreational endurance athletes, ages 21-34, served as subjects. Using a progressive, discontinuous treadmill (TM) test, each subject's lactate threshold (LT) was estimated. The speed that best represented LT was used for two subsequent 30-minute TM runs which were performed on separate days. A counter-balanced crossover design with repeated measures was used to compare a hangover run to a no-hangover run. On the night prior to the hangover run, subjects consumed enough commercial beer over a 2 hour period to achieve an approximate blood-alcohol concentration (BAC) of 0.15%. This was adjusted for body weight. Drinking took place in a controlled environment at the home of the investigator. Transportation to and from the home of the investigator, and to the St. Cloud State Human Performance Laboratory the next morning, was provided by a sober driver. To assess the degree of an expected body-water loss, body weight (BW), hematocrit (HCT), the nocturnal volume of urine voided

(VOL), and blood pressure (BP) were also measured and compared between hangover and no-hangover conditions. Physiological data collected at 5-minute intervals during the 30-minute TM run and 9 minutes of recovery were analyzed using a repeated measures MANOVA ($p < .05$). When a significant within-group difference was found, a type III sums of squares test was used to determine which variable(s) differed. This was followed by a least squares means test to determine at what time during the 30-minute TM run and recovery the statistically significant difference(s) occurred. A two-tailed paired t-test ($p < .05$) was used to examine RPE data. All other data were analyzed using separate two-tailed paired t-tests with an adjusted alpha level .007. In the hangover condition, mean HCT was higher (44.5 ± 2.5) when compared to values from the night prior (42.0 ± 2.0 , $p < .007$). This was not the case in the no-hangover trial. Body weight, on the hangover morning (77.3 ± 10.5 kg), did not differ statistically from the no-hangover morning (76.8 ± 10.7 kg). Mean RER values at 6 and 9 minutes into recovery were higher during hangover ($p < .05$). An aggregate RPE value was higher during the hangover run ($p < .007$). As expected, the volume of urine throughout the night, prior to TM testing, was greater following beer consumption ($p < .007$). Although measures of RER were higher at 6 and 9 minutes of recovery, these results suggest that the physiological variables measured during the 30-minute run at LT are not affected by excess beer consumed the prior night. However, the task is perceived to be more difficult than when no hangover exists. Contrary to the perceptions that some people hold, the consumption of alcohol did not elicit a water-related weight loss.

APPROVED BY RESEARCH COMMITTEE, FEBRUARY 1997
David W. Bacharach, Chairperson

PHYSIOLOGICAL RESPONSES TO SUBMAXIMAL EXERCISE ON MECHANICALLY BRAKED CYCLE ERGOMETERS

Steve A. Sanders

The cycle ergometer is widely used for testing submaximal and maximal physiological responses to exercise. Most of the cycle ergometers used for testing, use a mechanical braking device which employs a belt around the flywheel to provide the resistance. The mechanical braking device has a great advantage in being low cost while the accuracy with which the workload can be regulated is very good. Small changes in the resistance however, can affect the physiological variables being measured and it is particularly important to keep the ergometer properly calibrated. The purpose of this study was to determine if a difference exists in the metabolic cost and of riding three mechanically braked cycle ergometers that use different methods for applying resistance to the belt. Submaximal exercise tests were performed on three ergometers at five different resistances by 12 male subjects. Subjects pedaled at 60 rpm. During the last two min. of the test the subject's expired air was collected into the Tissot and analyzed for oxygen uptake. The subject's HR and RPE were measured during the last 15 sec. of minute four and five. Three two-way repeated measure ANOVAs were used to determine if a difference exists between the method of applying resistance to three cycle ergometers and HR, RPE and metabolic cost over a range of 1.0 kg to 3.0 kg resistance. A probability level of $p < 0.05$ was set to detect significance. No significant differences were found between HR, RPE, and oxygen uptake between the three cycle ergometers at any of the five resistances. The results of this study suggest that the method of applying resistance will have no effect on the physiological variables being measured. Although not significant, the workloads had to be constantly adjusted during the test period and under research conditions the cycle ergometer should be calibrated before each test.

APPROVED BY RESEARCH COMMITTEE, JUNE 1996
David Bacharach, Chairperson

ANALYSIS OF THE IMPORTANCE OF CRISIS COMMUNICATION IN PROFESSIONAL SPORTS

Kelly Jo Sauer

The purpose of the study was to determine whether professional sports organizations have crisis communications plans, determine how complete the organizations' preparation for crises is, and examine how the professional athletes are prepared for crises.

An overview of crisis communication was done to determine the elements of a crisis communication plan. The three major types of crises were defined as: immediate crises, emerging crises, and sustained crises. The information necessary for planning for a crisis consists of five steps. Step one is identifying worst-case scenarios. The second step is the appointment of one person as a spokesperson. The third step involves the organization of a crisis management committee to brief the spokesperson. The fourth step is preparing a "stand-by" statement. The final step is the annual review of the crisis policy. In addition, the training that professional sports organizations give their players to help deal with the media was explored.

The population of the survey consisted of public relations directors randomly selected from the National Football League, the National Basketball League, the National Hockey League, and Major League Baseball. A ten question survey was used to discover information related to the purpose of the study.

FINDINGS: The findings showed that 80% of the respondents had crisis communication plans for their organizations. Of the respondents that indicated that they had crisis communication plans, 85.7% indicated that they updated their plan at least once a year and 87% indicated that they have a designated spokesperson in the event of a crisis. All of the respondents indicated that their players were instructed on how to deal with the media.

CONCLUSIONS: A significant part of the effectiveness of a crisis communication plan is avoiding the use of the plan in the first place. The avoidance in professional sports organizations would be encouraging athletes to stay out of trouble and encouraging them to deal with the media in a positive manner so as to not create situations or further damage an already existing situation.

APPROVED BY RESEARCH COMMITTEE, JULY 1996

Lisa Heinrich, Chairperson

THE ALCOHOL CONSUMPTION OF FIRST-YEAR STUDENT ATHLETES AT A MIDWEST WOMEN'S PRIVATE LIBERAL ARTS COLLEGE

Laure L. Schingen

The purpose of this study was to research the alcoholic consumption behaviors of first-year college students, and more specifically student-athlete students in respect to change in alcohol consumption behavior, actual consumption of alcohol, and factors influencing alcohol consumption behavior. A fourth hypothesis researched the influence of upper-class teammates and first-year teammates with regard to first-year student-athletes alcohol consumption behavior.

A Chi-square, independent t-tests and paired t-test were used in this study to identify potential significant differences between student athletes and non-athletes students, and upper-class and first-year teammates.

The results of this study revealed no significant differences between first-year student athletes and non-athlete students regarding the change in alcohol consumption behavior, the amount of alcohol consumed, and the factors that influence consumption behavior. There was also no significant difference in the influence of upper-class and first-year teammates on student-athletes' alcohol consumption.

The alcohol consumption behaviors of the first-year student, whether a student-athlete or non-athlete student is a concern on college campuses. This research revealed that first-year students are consuming alcohol, but being an athlete has no impact on alcohol consumption.

APPROVED BY RESEARCH COMMITTEE: MAY 1998

Ruth J. Nearing, Chairperson

TEACHING STRATEGIES FOR IDENTIFYING MISCONCEPTIONS AND AFFECTING CONCEPTUAL CHANGE IN EARTH SCIENCE PHENOMENA

Thomas H. Smith

The purpose of the study was to measure the effectiveness of a set of teaching strategies used for identifying and changing misconceptions in the classroom. Three different earth science phenomena pertaining to motions of the earth, moon, and sun were used for the study. One objective of the study was to determine whether changes in conceptual understanding were significantly correlated with the use of these strategies. A second objective was to determine whether these strategies were effective in identifying and changing misconceived ideas in the study group.

Subjects were 28 grade 2-9 earth science teachers who participated in an earth science workshop at Moorhead State University, Moorhead, Minnesota during the summer of 1996. All subjects were given a pretest at the beginning of the workshop and a posttest at the end of the workshop two weeks later. All responses to the study question were assigned conceptual value using an author-developed rubric that identified key stages of conceptual understanding for each phenomenon. These values were then analyzed using a t-test.

Analysis indicated mixed results regarding the study's objectives. Conceptual understanding was found to be significantly related ($p < .05$) to the strategies used during the workshop. The limitations in the study adversely affected the significance of the results related to the second objective. While the results indicated that the strategies were partly successful in changing misconceived ideas identified in pretest responses, there wasn't enough data to say that the effects were significant or not.

Although the study was limited by its size and lack of a control group, there appears to be sufficient evidence to consider these teaching strategies for producing the types of science learning desired by The National Science Education Standards. The author suggests more complete research in the area.

APPROVED BY RESEARCH COMMITTEE, FEBRUARY, 1998

Kenneth Kelsey, Chairperson

AMAE AND THE RETICENT JAPANESE STUDENT IN THE ESL CLASSROOM

Jay C. Stocker

This paper is a study of the problem of the reticent Japanese student in the western ESL classroom in relation to the concept of *amae*, and is intended for western ESL instructors with no teaching experience in Japan. The problem is examined within the context of the research question and hypothesis which follow.

RESEARCH QUESTION AND HYPOTHESIS:

- (1) How is overall class participation of Japanese students affected by their ability to display and receive *amae* with their western instructors?
 - (H₁) The more their desire to give and receive *amae* is blocked or frustrated, the more reticent they will be in class (avoidance behavior).
 - (H₂) Teachers and student develop coping strategies (behaviors) to compensate for the perceived

failure to satisfy the Japanese students' desire for *amae* in a way similar to that inherent in their interactions with Japanese instructors in Japan.

METHODOLOGY:

The research findings are based on ethnographic data collected by nonparticipant observers of ESL classes at SCSU, and from questionnaires given to Japanese students at Minnesota State University, Akita (MSU-A), St. Cloud State University (SCSU), and Seirei Women's Junior College (Seirei), Akita City, Japan. Questionnaires were also given to western English instructors at Seirei and SCSU, and a questionnaire was also given to one Japanese English instructor at Seirei. In addition, the author's observations from his four years of teaching experience in Japan are reported.

CONCLUSIONS:

Analysis of the data confirm both hypotheses with qualifications. Although the ethnographic data were not easy to interpret due to the difficulty of assigning a psychological construct to observable behaviors, the questionnaire responses indicated that the longer Japanese students are exposed to the western classroom environment, the better able they are to cope with their desire to use *amae* with their western instructors. Since the Japanese students are inexorably in the western cultural context during their course of instruction, it is incumbent upon them to adapt their behavior to fit the cultural perspective of their western instructors in a manner appropriate to the cultural context. Also, the western instructors should be aware of the concept of *amae* and how it influences the behavior of their Japanese students in the classroom, especially those students with little prior exposure to western instructors in such a setting. Knowledgeable western instructors trained to recognize *amae* behaviors in their Japanese students, will expedite learning by demonstrating patience and tolerance of *amae* behaviors, and this, in turn, will result in empathy with their Japanese students.

APPROVED BY RESEARCH COMMITTEE, MAY 1998

James Robinson, Chairperson

THE PERCEPTION OF COHESION OF FEMALE INTERCOLLEGIATE STUDENT-ATHLETES

Janelle M. Tieken

The abundance of literature assessing cohesion in sport reflects the interest in determining cohesion's impact on sport groups. Cohesion lacks a common definition, yet it can be regarded as close-knittedness, oneness, or stick-togetherness. Previous research evaluated the cohesion-performance relationship (Carron & Ball, 1977; Ruder & Gill, 1982; Williams & Widmeyer, 1991), as well as the cohesion-satisfaction relationship (Williams & Hacker, 1982). However, little research was conducted on group differences between athletes (Granito & Rainey, 1988). Moreover, no research was conducted assessing group differences between athletes who choose to participate at private college or state university institutions.

The purpose of this investigation was to determine if a significant group difference existed in the perception of cohesion between types of school classifications- private and state institutions, as well as sport types- cross country and volleyball. The Group Environment Questionnaire (GEQ) developed by Widmeyer, Brawley, and Carron (1985), which is comprised of four subscales, was administered to 120 female intercollegiate cross country runners and volleyball players at the completion of each team's season. Subjects were enrolled in either a private college or state university in the upper Midwest. A 2 x 2 (sport type x institution classification) Multivariate Analysis of Variance (MANOVA) was utilized for analysis.

Data revealed that two subscales, ATG-T and GI-S, did not approach the acceptable reliability value of .70 recommended by Nunnally (1978); these were subsequently eliminated from further analysis. Results did not support the research hypotheses, in that, no significant group differences were found between either sport type or institution classification; however, an interaction effect between the variables was revealed (Wilk's Lambda = $F(2,$

115) = 7.68, $p < .01$). No significant main effect was noted, yet an interaction effect between school classification, sport type and the ATG-S and GI-T subscales was determined. Further, the GI-T subscale was the significant predictor variable. Continued study is necessary to further investigate this interaction between the variables.

APPROVED BY RESEARCH COMMITTEE, JUNE 1996

Ruth J. Nearing, Chairperson

THE EFFECTIVENESS OF A STRENGTH AND CONDITIONING PROGRAM FOR A COLLEGIATE SOFTBALL TEAM

Paula J. U'Ren

Twenty St. Cloud State University varsity softball players were tested on six different parameters to determine their strength and conditioning levels. Testing periods occurred in November 1996 (initial), January 1997 (preseason), March 1997 (in-season), and May 1997 (post-season). The six variables tested were body composition, aerobic capacity, anaerobic capacity, vertical jump, muscular strength, and hamstring flexibility. Body composition was determined by using the Jackson and Pollock skinfold caliper formula developed for women. Skinfold measurements were taken from the tricep, iliac crest, and thigh as suggested by Jackson and Pollock skinfold testing procedure. A recording of body weight and height followed body composition testing. Aerobic capacity was tested through the use of the Cooper 12 minute walk/run test. Each subject was required to run for a 12 minute time period. At the conclusion of the 12-minute run the coach that was responsible for the player would record her distance covered to the whole or half lap (meters). A 60-foot sprint was used to measure foot speed. Each subject was paired up with an individual similar in speed. One coach was responsible for the timing of one subject running. On movement, the clock was started and the subject was timed (sec.). Three trials were conducted with an average of the three trials taken. Vertical jump was assessed using the Lewis equation (kg/m/sec). A scale in inches was marked on the wall, perpendicular to the floor. An initial recording was taken with the subject standing with feet flat on the floor and the dominant arm outstretched to record standing reach height. The subject then jumped from a squat position and the reach of the middle finger marked distance jumped. Three trials were allowed with best of three jumps recorded and converted in the Lewis equation. Six maximal muscular strength lifts were used to determine chest, arm, and leg strength. Isotonic lifting activities were the bench press, leg press, military press, latissimus pull-down and hamstring curl. A maximum strength lift was based on an estimation of a 1 repetition maximum. Hamstring flexibility was determined by using a modified sit and reach box as developed by Hoeger and Hoeger. The individual completed the exercise with shoes removed and soles of feet firmly against the box. Starting with a 90 bend in the waist and fully extended legs, the subject extended her arms forward with hands clasped to take a reading in inches. Three trials were recorded and the farthest reached distance was used for analysis.

It was hypothesized that the collegiate softball players would attain the highest strength and conditioning levels in , or at the end of, in-season testing. It was also hypothesized that strength and conditioning levels would decline after in-season testing due to the emphasis on technical training during the competitive season. A single factor repeated measures ANOVA statistical test was run to determine if differences occurred from one testing period to the next for each variable. If a difference was found to occur, a Sheffe's post-hoc was run to determine when the difference occurred. Significance was determined by a $p > .05$ level of confidence.

The study concluded the following results: body composition did not decrease. Body weight, however, did decrease from preseason to post-season testing. Subjects showed no change hamstring flexibility from preseason to post-season testing. The vertical jump data indicated that no difference from one testing period to another. The sprint time of the subjects will also remain consistent from one testing period to the next. With respect to aerobic capacity of the subject, there is a significant increase from initial testing to that of pre-, in-, and post-season testing dates. The subjects will not decrease in performance from preseason to post-season testing. Maximal strength is

attained in, or at the end of the in-season testing period. With the athletes increasing in all lifts from initial testing to testing periods of pre- and in-season. The subjects will maintain their performance of strength levels from in-season to post-season testing.

APPROVED BY RESEARCH COMMITTEE: AUGUST 1997

David Bacharach, Chairperson

RUOLLAH KHOMEINI AND SADDAM HUSSEIN: SPIRITUAL AND TEMPORAL DESPOTISM IN REGIONAL CONFLICT (1980-1988)

Gary R. Valentini

This study is an attempt to shed light on the origins, character, and outcome of the Iran-Iraq war of 1980-1988, a conflict little understood in the west and producing significant political changes and instability in the Northern Persian Gulf region. Although the military and general dimensions of this conflict has received some attention by scholars such as Dilipo Hiro, Charles Tripp, and Sharam Chubin, this work attempts to analyze the conflict from the perspective of leadership and ideology. The roots and nature of this conflict lay with the persons and belief systems of the protagonists Ruollah Khomeini and Saddam Hussein. The ascension of both to power in 1979, resulted in ideological and political upheaval which is still being felt in the region. Examination of the leadership dimension is of paramount importance since both individuals represent opposing philosophical systems. Ruollah Khomeini represents the triumph of resurgent political Islam and pan-Islamic ideals. Conversely, Saddam Hussein represents the continuation of pan-Arab nationalism. Each leader sought to instill his nation with a special mission designed to rectify the ills which had befallen the region. For Khomeini, Iran was to be the vanguard of a new Pan-Islamic order and the politico-moral paradigm for the Muslims of the region to emulate. Hussein's Iraq was to be the Arab world's new Egypt, forming the kernel of a new Pan-Arab renaissance. Such incompatible ambitions logically resulted in a struggle for supremacy between these belief systems and their champions. Khomeini's Islamic revolution could only be considered a success, in his view, if it was spread outward to polities. Conversely, Iraq required the development of internal political stability for Iraqi nationalism to congeal and the nation to fulfill its destiny of becoming the new Egypt. The war which arose between 1980-1988 originated in large from Hussein and Iraq's response to the Khomeinist challenge. It became a battle of preservation for Hussein's and revolutionary expansion for Khomeini's Iran.

The dissertation posits as its central thesis tenet, the following question: "Why did Ruollah Khomeini fail to extend his messianic, pan-Islamic revolution to Iraq in his clash with the Hussein regime?" The answer to this question can be found in the analysis, which portrays the conflict as a product of rival and incompatible despots with rival ideologies and ambitions. The study can be divided into three distinct areas: 1) analysis of the regime structures and causal elements [Chapters I, II, III], 2) analysis of each regime's strategic conduct of the war in the political, military, economic, and foreign policy spheres [Chapters IV, V, VI], and 3) analysis of the implication of these strategies on the goals and political fortunes of the protagonist regimes [Chapter VII]. The methodology utilizes both primary sources--speeches and interviews of both leaders which elucidate the actions and feelings of the protagonists in their own words--secondarily periodical and text sources. The methodology examines the charismatic and despotic dominance each leader exuded over their societies as well as the personal animosity exhibited between the two men. This forms the antecedent causal condition for the Iran-Iraq war to emerge as well as the nature the conflict would assume. This historiographic perspective does not relegate other causal and prosecuting factors of the war to obscurity but merely downplays them in favor of the overriding role of the protagonists in precipitating and controlling what Chubin and Tripp term a "regime-based conflict" (Charles Tripp and Sharam Chubin, *Iran and Iraq at War* [Boulder, CO: Westview Press, 1991], 51). As its conclusion, this work compares the conflict strategies against the outcomes to determine the implications of each leader's ideology and actions in realizing their primary

objectives. The study effectively answers the thesis question by concluding that the Hussein regime achieved a concrete victory by undertaking effective pragmatic policies required to prevail over a larger and spiritually-inspired enemy.

APPROVED BY RESEARCH COMMITTEE: APRIL, 1998

Richard Lewis, Chairperson

A SURVEY CONCERNING THE PERCEPTIONS OF MIDDLE SCHOOL SCIENCE TEACHERS OF MINNESOTA IN REGARD TO THE NRC'S NATIONAL SCIENCE EDUCATION STANDARD OF INQUIRY

Thomas R. Wesner

The National Science Education Standards and the Minnesota Graduation Standards both present inquiry as important and central to science teaching. The review of literature acknowledges that science teachers are instrumental in implementing the inquiry standards.

THE PROBLEM:

The review of current literature showed little knowledge of Minnesota middle school science teachers' perceptions about inquiry-oriented instruction. The Minnesota TIMSS (Third International Math and Science Survey) survey revealed minimal use of inquiry within the classroom. If Minnesota middle school science teachers are supposed to implement inquiry, it would be helpful to determine exactly what are the teachers' perceptions in regard to why inquiry is not being implemented in middle school science classrooms.

PROCEDURES:

The following research questions were developed for this study:

1. What are the perceptions of Minnesota science teachers in grades 5-8 in regard to the importance of the inquiry standard for their students?
2. What are the perceptions of Minnesota science teachers in grades 5-8 in regard to their students' ability to attain the inquiry standard?
3. What are the perceptions of Minnesota science teachers in grades 5-8 in regard to their need for help in effectively implementing the inquiry standard through in-service?
4. What are the perceptions of Minnesota science teachers in grades 5-8 in regard to their need for help in effectively implementing the inquiry standard through curriculum development?
5. What are the perceptions of Minnesota science teachers in grades 5-8 in regard to their need of help in effectively implementing the inquiry standard through the acquisition of materials and /or equipment?
6. What are the perceptions of Minnesota science teachers in grades 5-8 in regard to their currently implementing the inquiry standard?

The survey document was developed, reviewed, revised, and field tested in fall, 1996. Mailing labels of currently practicing middle school science teachers in Minnesota were acquired from the State Department of Children, Family, and Learning. Eight hundred forty-seven surveys were sent out at the end of January, 1997. Two hundred fifty-eight surveys were returned with four from individuals not currently teaching middle school science.

Data from the 254 completed surveys were compiled and analyzed in the spring and summer of 1997.

Positive statements (strongly agree, agree) were collapsed, as well as the negative statements (strongly disagree, disagree) to simplify the analysis. Grand means were tabulated for each of the six research questions.

CONCLUSION:

The following conclusions were drawn based on the perceptions of Minnesota science teachers in grades 5-8 that were surveyed on this study:

1. A very large majority of teachers believe that the inquiry standard is important for their students.
2. A large majority of teachers believe that the inquiry standard is attainable by the students.
3. A slight majority of teachers believe that they do not need help in implementing the inquiry standard through in-service.
4. A slight majority of teachers believe that they do not need help in implementing the inquiry standard through curriculum development.
5. A slight majority of teachers believe that they do not need help in implementing the inquiry standard through the acquisition of materials and/or equipment.
6. A majority of teachers believe that they currently implement the standard in their teaching.

APPROVED BY RESEARCH COMMITTEE: AUGUST 1997

Patricia Simpson, Chairperson