Table of Contents

International Conference on Computers in Education — ICCE 2002

Preface ........................................................................................................................................... xxxvii
Committees ..................................................................................................................................... xxxix
Sponsors ......................................................................................................................................... xli
Reviewers ....................................................................................................................................... xlii

Volume I

Keynote Papers

Social Design of Network Learning Society .................................................................................. 1
   T. Chan

Learning Communities — Old and New ......................................................................................... 6
   R. Lewis

Knowledge Forum as a Catalyst for Fostering Knowledge-Building Communities ......................... 14
   A. Collins and K. Bielaczyc

Invited Papers

Peer to Peer Convergence: Designing a Pedagogical Framework for Personal Learning Networks ........ 19
   R. Luckin

The HyperClass: Education in a Broadband Internet Environment .............................................. 23
   J. Tiffin

The Socially Interactive Pedagogical Agent within Online Learning Communities ......................... 30
   C. Dowling

Features and Framework of Information Communication Technology Use in Classes Based on Qualitative Analysis ................................................................. 35
   K. Akahori

Full and Short Papers

Agents Technology

Multimedia Intelligent System for Online Learning ......................................................................... 40
   C. Buabeng-Andoh and D. Asirvatham

Agent Supported Collaborative Learning Using Community Web Software .................................. 42
   T. Ishikawa, H. Matsuda, and H. Takase

A Web-Based Navigation to Conduct Disambiguation Dialogues in Chinese Language ...................... 44
   J. Yang and C. Tsai
MIMIC: Real-Time Marker-Free Motion Capture System to Create an Agent in the Virtual Space ........................................ 48
S. Kim, R. Lee, C. Park, and I. Lee

Educational Contents Sharing and Retrieving Systems Using Mobile Agent ............................................................... 50
C. Lee and S. Han

Building a Recommender Agent for e-Learning Systems ................................................................. 55
O. Zaiane

A Design Approach for Agents in Distributed Work and Learning Environments ....................................................... 60
S. Dragsnes, W. Chen, and R. Baggetun

**Application of Instructional Design Theories**

Anatomy of a Tone: A Highly Functional Web-Based Interactive Learning Module ..................................................... 65
A. De Ritis

Recognition of Eye Direction Using Separability Filters in Touch-Type Training ...................................................... 67
M. Arai, H. Shimosakai, H. Watanabe, and S. Takei

Applying Demand Analysis of a Set of Test Problems for Developing Adaptive Courses ........................................ 69
D. Albert and C. Hockemeyer

The Implications of Research Literature on Learning Styles for the Design and Development of a Web-Based Course ................................................................. 71
M. Moallem

The Effects of Embedded Scaffolding Strategy in a Cognitive Flexibility-Based Computer Learning Environment .................................................................................. 75
S. Petsangsri

NTUs: An Intelligent Tutorial System Fosters Number Concepts through Computational Scaffolding .................. 80
C. Hue, C. Kao, M. Lo, C. Chiang, L. Tu, and W. Hsu

Kanji Learning System Based on the Letter Shape Recognition Method ................................................................. 85
S. Fujita, K. Omae, C. Lin, and Y. Ming

Designing Effective Instruction for Computer in Education Courses ................................................................. 90
C. Tubsree and N. Tubsree

**Architecture of Learning Technology Systems**

Technology for Performance-Based Lifelong Learning ...................................................................................... 92
D. Woelk and P. Lefrere

A Computational Method of Complexity of Questions on Contents of English Sentences and its Evaluation .................................................................................. 97
H. Kunichika, M. Urushima, T. Hirashima, and A. Takeuchi

Mirror Modeler: A Web Based Interactive Mathematics Modeling System .................................................. 102
E. Alkhalifa and L. AlDallal

A Study on Assisting in Prolog Program Comprehension by Using Stepwise Execution and Stepwise Comparison ........................................ Y. Deguchi, M. Nakamura, and S. Otsuki 106

A Cognitive Student Model — An Ontological Approach ........................................ L. Tu, W. Hsu, and S. Wu 111

Visualization of Bugs in Subtraction with Block-Box Model ................................ T. Hirashima, M. Noguchi, and A. Takeuchi 113

Exploiting Knowledge Representation in an Intelligent Tutoring System for English Lexical Errors ........................................ C. Hsieh, T. Tsai, D. Wible, and W. Hsu 115

Accessing Learning Objects within the Multi-Modal Description Framework ........ J. Chen, E. Heinrich, and E. Kemp 117

A Support Environment for Learning by Describing Problem Map .................... A. Nakano, T. Hirashima, and A. Takeuchi 119

Fusion Method for Designing Computer-Based Learning Game ....................... T. Umetsu, T. Hirashima, and A. Takeuchi 124

Building a Web-Based Learning Portfolio for Authentic Assessment ................. C. Chang 129

Effective Delivery of Virtual Class on Parallel Media Stream Server ............... S. Kim, J. Nam, and S. Yeom 134

Intelligent Teaching Assistant Systems ................................................................ K. Yacef 136

Comprehension of English Texts Corresponding to Physiological Information: For a Monitoring Module in the English Self Learning Support System Using the Eye Movement Tracking ............. H. Hayashi, T. Maeno, and S. Kunifugi 141


An Agent Based Programming Language Learning Support System ............... H. Mungunsukh and Z. Cheng 148


Learning Assistance Expert System Based on Java Production System with a Self-Adaptive Function ................................. Y. Fujiwara, B. Matsuzawa, and S. Okada 158

A CAI System Incorporated with Mathematica for Science and Engineering Students ........................................ C. Ding, H. Hase, and M. Yoneda 160
Architecture for Flexible Teaching from Diverse Document Collections .......................................................... 162
S. Holden

Diagram-Based CBA Using DATsys and CourseMaster ................................................................. 167
C. Higgins, P. Symeonidis, and A. Tsintsifas

### Authoring Tools

Using CM-ED for the Generation of Graphical Exercises Based on Concept Maps ........................................... 173
M. Larrañaga, U. Rueda, J. Elorriaga, and A. Arruarte

An Instrument to Evaluate Computerised Question Paper Generators ........................................... 178
P. Potgieter and P. Blignaut

Authoring Web-Based Tutoring Systems with WETAS ............................................................................. 183
B. Martin and A. Mitrovic

Network Hypermedia Authoring Projects Mediator Environment for History Learning and Teaching ........ 188
A. Matta

Proposal of an Automated Record Integration System for a Programming Exercise Class ...................... 193
N. Matsuda and H. Taki

An Efficient Chinese Parsing Algorithm for Computer-Assisted Language Learning .......................... 195
C. Leung, Y. Chan, and A. Wu

CHALLENGE — An Authoring Tool for Problem-Based Scenarios, Delivered Alone or over the WWW .......... 197
T. Stewart and P. Bartrum

### Best Mix of Face-to-Face and E-Interactions

Technology Integrated Classes versus Traditional Classes and their Impact on User Performance and Perceptions .......................................................... 202
J. Thomas

Students' Choice of Learning Methods: Seeking the Best Mix of Face-to-Face and e-Interactions ............ 205
K. Schmidt

A 3-Component Hybrid Model for Traditional Courses ............................................................................. 207
H. Matthews

Tutoring ESL Writers Online ..................................................................................................................... 209
T. Hoon and L. Emerson

Face to Face Lectures or eContent: Student and Staff Perspective ............................................................ 211
R. Phillimore

User-Oriented Interface for Collaborative Learning Enviornment .............................................................. 213
T. Kojiri, Y. Ito, and T. Watanabe

Interactive Conversational Character as a Virtual Tour Guide to an Online Museum Exhibition ........... 215
P. de Almeida and Y. Shigeki
Human Communication and Interaction in Web Based Learning:
A Case Study of the Digital Media Web Course .......................................................... 217
  H. Liu, X. Hu, and X. Zhang

Trial of Collage Method to Evaluate Learning Environments including CSCL .......................................................... 222
  S. Ozawa and O. Inoshita

The Quest for the Best Mix: An Ongoing Project in E-Learning .......................................................... 227
  K. Petrova

Collaborative Learning by Distance Chorus on the Internet .......................................................... 229
  K. Maeda, T. Kishida, and E. Kohno

Cognitive Experiments Using the Web and Virtual Reality to Study Spatial Navigation Errors .......................................................... 234
  K. Tamura, K. Shinohara, and B. Indurkhya

A Study on Teaching Children the Role of Decentralized Control in Social Communication Using an Interactive Simulator .......................................................... 239
  H. Kokuryu, I. Okano, and B. Indurkhya

Enhancing Learning through Self-Explanation .......................................................... 244
  A. Weerasinghe and A. Mitrovic

From PROLOG to JAVA: Applying MEDD to Object Oriented Programming .......................................................... 249
  M. Cruz and R. Sison

Judging the Veracity of Web Sites .......................................................... 251
  M. Crosby, M. Iiding, and E. Klemm

Analysis of Children’s Web Browsing Process: ICT Education in Elementary Schools .......................................................... 253
  H. Kikuchi, H. Kato, and K. Akahori

Study of Group-Learning Support Based on Keyword-Map Structural Modeling .......................................................... 255
  H. Saito, T. Maeda, and A. Ohuchi

Scaffolding Scientific Conceptualization: Multiple Representation and Multilevel Visualization Using an Iconic Modeling Tool .......................................................... 257
  N. Law

**Collaborative Learning/Groupware/Co-Operative Learning**

Enhancing Collaborative Learning through Online Discussion and Peer Assessment .......................................................... 262
  E. Ng

A Learning Strategy of the Across-Classroom Competition Supported for Event-Driven Learning .......................................................... 264
  S. Chang, J. Liang, H. Wang, T. Liu, J. Yang, and T. Chan

Evaluating Computer-Supported Collaboration for a Problem-Solving Task .......................................................... 266
  T. Wright and A. Cockburn

The Effectiveness of a Web Bulletin Board Enhanced with a Knowledge Map .......................................................... 268
  M. Nagai, K. Shiraki, H. Kato, and K. Akahori

Supporting Communication Processes in E-Learning Networks .......................................................... 273
  M. Schertler and F. Bodendorf
Using a Simulated Student to Repair Difficulties in Collaborative Learning ................................................................. 349
   A. Vizzcaino and B. du Boulay

Research in Development of a Network Simulation Game for Education of Democratic Citizens .......................... 354
   J. Gu, J. Park, J. Lim, and S. Kim

Understanding the Ontological Requirements for Collaborative Web-Based Experiential Learning ................... 356
   E. McKay, B. Garner, and T. Okamoto

   A. Inaba, R. Ohkubo, M. Ikeda, and R. Mizoguch

The Importance of Guidance when Using Multimedia Based Scenarios in Collaborative Peer Groups to Support the Development of Professional Expertise in Undergraduate Divers .................................................. 363
   J. Yorke

Global Education via the Web: The GlobalEd Project .................................................................................. 367
   S. Brown, M. Boyer, H. Mayall, P. Johnson, L. Meng,
   M. Butler, K. Weir, N. Florea, and S. Reis

Peer-to-Peer eLearning and the Team Effect on Course Completion .......................................................... 369
   J. Sumner and K. Dewar

Developing a Peer Learning Community through the use of CMC ........................................................................... 371
   A. Yeung

The Online Learning Community: Strategies, Problems and Issues ................................................................. 376
   R. Geer and W. Au

Transcending the Information Given: Designing Learning Environments for Informed Participation .................. 378
   G. Fischer and J. Ostwald

Netpro: An Innovative Approach to Network Project Based Learning .................................................. 382
   H. Batatia, A. Ayache, and H. Markkanen

Analysis of Relationship between Face-to-Face Collaborative Learning and CSCL Activities .......................... 387

Approaches to Peer-to-Peer Learning in the Adult Disadvantaged Population .................................................. 392
   L. Katz, E. Chang, J. Lyndon, C. Scialfa, A. Rezaei, C. Aizenman, and G. Kopp

Information Technology and Foreign Language Learning: What Happens When No Teacher Is Around ? .................. 394
   J. Gerbault

Community Incubator: Supporting Construction of Online Learners’ Community through Visualization ............ 399
   H. Suzuki and H. Funaoi

Collaborative Knowledge Building through BBS for Better Cross-Cultural Communication .......................... 404
   Y. Nakanishi, L. Tatsuta, M. Ohnishi, A. Iguchi, G. Tomizawa, and K. Gunji

The Development of Web-Based Learning Community System to Facilitate Learner’s Creating the Autonomous Robots ................................................................. 409
Computer Mediated Communication

Building a Learning Community via Videoconferencing ............................................. 411
C. Hu, A. Wong, L. Sharpe, L. Crawford, S. Gopinathan, M. Khine, and S. Moo

Providing Timely Feedback to Large Classes ............................................................ 413
Y. Pisan, A. Sloane, D. Richards, and R. Dale

International Partnerships, Collaborative Learning, and Interactive Communications Technology:
Using a Global Forum on School Leadership to Enhance the Preparation of School Leaders ................. 415
I. Gibson

Communicating Is Not Easy! Can the Computer Help Second Language Learners and Teachers? .............. 419
R. Lelouche

Strategies for the Use of Synchronous Computer-Mediated Communication in Education .................... 421
G. Salter

Differences between Communications Using E-mail and BBS in an E-counseling Environment .................. 423
S. Kato, G. Ota, and K. Akahori

Effect of Contents of E-mail Messages on Affections ...................................................... 428
Y. Kato, K. Sugimura, and K. Akahori

Factors Affecting Contributions to Electronic Discussion Boards: A Preliminary Analysis ....................... 433
D. Joyce

A Comparison of Student use of Email in Four South Pacific Countries ............................................. 435
J. Toland

Identity, Race, CMC and Cyberspace ............................................................................. 440
S. Tettegah

Interactive Tutoring on Communication Gaps in a Communicative Language Learning Environment ............ 445
J. Chen, T. Okamoto, and S. Belkada

Determinants of the Adoption of Web-Based Educational Technology:
A Preliminary Data Analysis of New Zealand Tertiary Educators ................................................. 447
O. Tetiwat and S. Huff

Virtual Classroom Discussions versus Traditional Classroom Discussions ........................................... 452
B. Baltes

A Study of Designing a Communication-Technology Course to Facilitate English Learning .................. 454
S. Wang

Use of Information Communication Technology Tools for the Development of Presentation Skills ............ 456
Y. Naruse and A. Nagayama

Facilitating Learning and Teaching by Computer-Mediated Communications (CMC):
A Reflective Experience of Pre-service Student-Teacher .................................................... 458
W. Yip

Using On-line Discussion to Teach Critical Thinking Skills in an Adult Workplace Literacy Program ............ 460
S. Symons, H. Hemming, and L. Langille
Facilitating the Process of Knowledge Construction among Preservice Teachers through Computer-Mediated Communications........................................462
   J. Peterson-Lewinson

An Exploratory Study of Cognitive Load in Instructional Chat Rooms ..................................................464
   M. Thirunarayanan, C. Ryan, and A. Perez-Prado

The Nature of Learners’ Email Communication..................................................................................468
   T. Lê and Q. Lê

Learning Communities on the Internet: Teaching in the Queensland Virtual Schooling Service.................472
   L. Smith

Importance of Interactivity and Customization in Online Learning..........................................................474
   C. Leung, Y. Chan, and A. Wu

Development of Web-Based Supporting BBS about Educational Practice for Math Teachers in Junior High Schools..................................................476
   N. Kozuki and H. Miyata

Country Specific Developments

ICT and Chinese Language Instruction: Eight Teachers’ Perspectives ..................................................478
   J. Lin and H. Chen

Social Challenges of Using Computers to Teach Socially Disadvantaged Groups in the New South Africa ..................................................483
   D. Ng’ambi

Automated Lesson Planner System for ICT Education...........................................................................485
   J. Cheon, J. Paek, S. Han, and C. Lee

The SCHOLAR Programme in Scottish Education...............................................................................490
   C. Beevers

Technology Integration: Best Practices in Higher Education ..................................................................492
   M. Javeri

Use of Computers and Family Life of Tertiary Students in Hong Kong..................................................494
   K. Lau and W. Au

Informal eLearning Communities: The UK Online Perspective.............................................................499
   J. Cook, A. Ravenscroft, F. Garnett, and M. Smith

Promoting the Use of Information Technology in Education via Lightweight Authoring Tools ............501
   B. Chiu and Y. Yu

IT in Education: What is Really Needed of Teachers’ IT Competencies? .................................................506
   A. Wu and C. Leung

Country Specific Developments: The Norwegian Network for IT-Research and Competence in Education: Semantic Web and Wireless Networks in Teacher Education ......................................508
   M. Søby
Developing Innovative Online Educational Materials for Undergraduate Curriculum in Information Technology

V. Uskov and M. Uskova

Design Principles

Computer-Based Support for the Training of Children's Pedestrian Skills: Software Design and Evaluation of Impact

A. Tolmie, J. Thomson, and H. Foot

Quality Assurance for a General Education Course at the University of California, Davis

M. Kunnath

Design and Analysis Patterns in ITS Architectures

A. Harrer and V. Devedzic

Critical Features for Enhancing the Design of Web-Based Learning Materials

E. Ng

Designing Programming Tasks to Elicit Self-Management Metacognitive Behaviour

A. Carbone, I. Mitchell, D. Gunstone, and J. Hurst

Designing Online Learning Sites to Cater for Learning Needs

C. McNaught, D. Kennedy, and J. Majoor

Designing Information Systems Courses in Flexible Learning Mode

K. Bryant

Guidelines — A Critical Success Factor in the Development of Web-Based Trainings

O. Bohl, A. Frankfurth, J. Schellhase, and U. Winand

“OKOME” NHK's Full-Digital Material (2): Effectiveness of the Material According to the Data from a Pilot School

H. Kurokami, K. Shouji, S. Kodaira, K. Okamoto, A. Nishibuchi, and K. Suzuki

PCA: Simulating Erroneous Equations for Error-Visualization

T. Horiguchi and T. Hiroshima

Creative Problem Management in Web-Tutored Programming Projects

J. Suhonen and E. Sutinen

An Execution System for Variable Tutoring Processes

E. Volz, A. Martens, and A. Seitz

Cognitive Load in Multimedia Learning: The Role of Learner Preferences and Abilities

J. Plass and B. Homer
Distributed Learning

Towards Sustainable Learning............................................................................................569
H. Cheah and E. Cheah

A Process Model for Building Social Capital in Virtual Learning Communities..................574
B. Daniel, G. McCalla, and R. Schwier

A Prototype Distributed Adaptive Learning System .......................................................576
R. Hetherington, S. Sood, and B. Advani

Diagnosing Students’ Algebra Errors on the Web..........................................................578
F. Lee

A Design Framework of Interactive Distance Learning in Distributed Systems ..................580
T. Kamolphiwong, S. Kamolphiwong, and C. Siriyuenyong

Evaluation of Impact

Views of the First Cohort of HKU Notebook Programme Participants ................................585
C. Blurton and A. Lee

Evaluating the Level and Manner of Use of ICT in the New Zealand Secondary School: A New Approach .................................................................587
L. Ward

Factors Affecting Usage of Web-Based Teachers’ Training in Elementary and High School .................................................................589
N. Chen, H. Huang, and Y. Shih

K. Pratt, A. Trewern, and K. Lai

Student Teachers’ Perceptions of the Internet: Motivation, Influences, and Use ................598
C. Almeida, C. Morais, L. Miranda, F. Viseu, and H. Martinho

Creating an Interest in IT: A Gender Study ..................................................................603
J. Sheard and S. Markham

Applying Web-Based Instruction to Food Nutrition Course ...........................................608
L. Lin, R. Huang, and K. Chan

Preservice Teachers’ Thinking Styles, Dispositions, and Changes in their Teacher Behaviors .................................................................610
Y. Yeh

A Framework for Analysing Effective IT Integration into Classrooms by Teachers ...............612
S. Divaharan

Using Simulated Students to Evaluate an Adaptive Testing System ..................................614
S. Abdullah and R. Cooley

Quality Assurance and Online Teaching and Learning: First Steps ................................619
R. Corderoy, R. Stace, and R. Pennell
Evaluation of Learning Systems

Evaluation of Hypermedia Educational Systems: Criteria and Imperfect Measures .............................................. 621
P. Diaz, M. Sicilia, and I. Aedo

The Information Feedback System of Tsinghua Web-Based School ................................................................. 627
L. Huang, D. Jiang, and N. Luo

From Electronic Textbook to Multidimensional Learning Environment:
Overcoming the Loneliness of the Distance Learner .............................................................................................. 632
R. Johnson, E. Kemp, R. Kemp, and P. Blakey

Applying Task-Given-Type Examination System to the Semester Examination of a University ..................... 637
T. Takeuchi and A. Sakuma

Network-Based Language Teaching Today: Multimodality, Multi-Dimensionality and Interaction ................. 639
R. Hampel

The Efficacy of a Web-Based Domain Independent Question-Posing and
Peer Assessment Learning System ...................................................................................................................... 641
F. Yu, Y. Liu, and T. Chan

Experience Using a Novel Web-Based Tutorial and Assessment Tool for
Advanced Electronics Teaching .......................................................................................................................... 643
N. Patel, G. Covic, and S. Hussmann

CO-ED: A Development Platform for Interactive Patient Education ................................................................. 648
J. Finkelstein, S. Nambu, R. Khare, and D. Gupta

Effectiveness of Web-Based Materials to Support Learning in Botany .............................................................. 650
R. Phillips and C. Baudains

Online Help Systems: Learning while Working .................................................................................................... 652
G. Foster

Preliminary Results from the Validation of a Specialists’ Degree in Motor Disability Assessment .................. 654
S. Valenti, M. Panti, and T. Leo

Enabling Professional Communication for Practitioners across Europe ......................................................... 659
G. Conole, M. Hall, and S. Smith

Comparison of Learning Efforts Using Fuzzy Graded Mean Integration Method ............................................. 661
C. Wang and S. Chen

Handheld Computers and the Standards, Assessment, Accountability Movement ........................................... 666
P. Swenson

Collaborative Second Language Writing: An Activity Analysis of Web Conferencing .................................. 668
J. Brine, M. Johnson, M. Franken, and L. Campbell

A Machine Learning Framework for an Expert Tutor Construction ................................................................. 670
R. Legaspi and R. Sison

Evaluating Educational Software Environments ................................................................................................. 675
P. Gerdt, R. Miraftabi, and M. Tukiainen
The Design and Evaluation of Language Learning Materials Based on Comic Stories and Comic Strips
C. Lai, P. Bjornerud, K. Akahori, and S. Hayashi

A New Structural Knowledge Assessment Based on Weighted Concept Maps
S. Lin, K. Chang, Y. Sung, and G. Chen

Different Media for Language Learning: Does Technology Add Quality?
C. McLoughlin, H. Hutchinson, and M. Koplin

Implementation Experiences

Integrating ICT in the Teaching of Science in Secondary Schools
L. Rogers

Analysis of Key Typing Process Using Hand Position Process
A. Tsubokura, N. Ashida, N. Matsubara, I. Oshima, K. Kozuki, and K. Tsushima

Re-Doing the Subject: Implementation Experiences in going Online
K. Gray

Teaching Presence in Computer Conferencing: Lessons from the United States and Australia
K. Murphy, P. Smith, and E. Stacey

Reaching the Wider Learning Community: Exploring the Support and Design of Media Enhanced Teaching
M. Duncan, M. Ryan, and J. Lidstone

Integrating Information Technology in a Discovery School — A Case Study
W. Au and B. White

Computer Systems Pedagogy Using Digital Logic Simulation
M. Johnson and B. Craig

Learning Technologies in Higher Education: Supporting Transformative Practice
C. Whitelaw, M. Sears, D. Law, and K. Campbell

Web Services — What Do They Mean to Web-Based Education?
W. Chen

A Study on Web-Based Continuing Professional Development Program for Teachers: A School-Based Approach
M. Chen and H. Wang

Adaptivity in Problem-Based Learning: Use of Granularity
S. He, Kinshuk, and A. Patel

K. Watanabe, N. Sumi, T. Aimori, M. Otani, H. Tanaka, Y. Okazaki, T. Hayashi, and H. Kondo

Development of Collaborative Implement for Active Observation (CIAO)
H. Kato and T. Miyamoto
Information and Communication Technology across the Curriculum: A Game of Snakes and Ladders ....................717
W. Keane and T. Keane

Learning about e-Learning: Some Insights into a Postgraduate Learning Community .................................719
L. Schaverien

A Concept of User Agent for User Interface of C Compiler .............................................................................722
K. Nagao and N. Ishii

Collaborative Consultation: An Innovative Model for Faculty Development in Technology ......................727
S. Spurgeon and J. Bowen

The Changing Role of Tutors: Forming a Community of Practice in a
Distributed Learning Environment .................................................................................................................729
G. Lefoe, J. Hedberg, and C. Gunn

Implementing Computer Technology into the Language Learning Process:
What Difference Does It Make? ......................................................................................................................734
F. Zhang

Evaluating Learning Behavior of Web-Based Training (WBT) Using Web Log ........................................736
A. Wu and C. Leung

The Implementation of, Achievements in and Reflections on School-Based
Education Resource Centers — Examples of Chinese Language and Social Science Subjects ..........................738
M. Chao, K. Chao, and W. Yang

Building a Course on the Run ......................................................................................................................743
M. Coghlan

Instructor Networking

Organized Exchange Repositories for Learning Resources .................................................................................748
G. Yeo and P. Wong

A Framework for Sharing Problems and Evaluation Case-Bases in Instructor Communities ..........................753
H. Watanabe, M. Arai, and S. Takei

Integrated Learning Environments

Constructing a Self-Directed Collaborative Learning Environment by Combining
Traditional and Non-Traditional Ways — An Example of Student-Families in Network ..............................758
S. Lin and C. Chiang

The IKBS-DARWIN Research and Learning System for Sharing Biodiversity
Knowledge of Tropical Islands ............................................................................................................................760
N. Conruyt, Y. Geynet, D. Grosser, A. Senteni, M. Santally, and S. Sonah

Password Input Interface Suitable for Primary School Children ......................................................................765
T. Mendori, M. Kubouchi, M. Okada, and A. Shimizu

Modeling the Process of Learning Common Fraction Operations:
Designing an Internet-Based Integrated Learning Environment for Knowledge Construction ..................767
S. Kong and L. Kwok
Learning with ICT: The Challenge of Changing the Way We Teach .................................................. 772
  K. Lee

Evaluation of WIER — A Capstone Project Management Tool ......................................................... 777
  J. Ceddia and J. Sheard

Learner Autonomy and Technology: An Integrated Language Learning Environment ...................... 782
  D. Dolan

Individualized Collaboration Support for Online Leaning Communities ............................................. 784
  Q. Jin

Cognitively Oriented Design of a Multimedia System to Learn Guitar Fingering ................................ 789
  T. Izumi

Real/Virtual Classmates in an Asynchronous Distant Learning Environment ....................................... 792
  K. Matsura, F. Hesse, Y. Ochi, H. Ogata, and Y. Yano

An MPEG2 over IP Transfer System Integrating Live Distance Lecture and On-Demand Distance Learning ......................................................... 797
  K. Nishimura, T. Kondo, and R. Aihara

A Collaborative Lab- and Learning Environment for a Virtual Database-Practical at the Virtual University ......................................................... 799
  D. Becking and G. Schlageter

Learning by Problem-Solving Assisted of Planning and Retrieval of Sample Problems with Solutions Indexed by Structured Solution Plan ......................................................... 801
  T. Watanabe, N. Takano, M. Itami, and K. Itoh

An Elementary School Mathematics Dynamic Learning System and Its Effects .................................. 806
  P. Wang, W. Cheng, W. Wang, and P. Hung

Using Computers as Mindtools to Learn Time Concept in Elementary School .................................. 808
  S. Wang, W. Wang, and Q. Huang

Shared Cognitive Space: An Enabling Tool for Conceptual Frameworks ............................................. 813
  L. Sing

Integrating Information Resources and Online Learning in the UK .................................................. 818
  S. Currier

Interactive Blackboard Software Visualizing Students’ Feedback — Toward “i-room”: Classroom Computerization ......................................................... 823
  K. Sato, M. Yanagisawa, and K. Akahori

Virtual Reality and Speech Recognition Applying to Signal Analysis Tutor ........................................ 828
  C. Avilés-Cruz, M. Reyes-Ayala, and E. Andrade-Gonzalez

Developing Innovative Web-Lecturing Technology and Online Courses at Bradley University .......... 833
  V. Uskov and C. Etaugh

Effects of Computerized Advance Organizers on Elementary School Mathematics Learning ............. 838
  C. Tseng, W. Wang, Y. Lin, and P. Hung