



Electronic Dissertations at WVU

R[e]volution in
Graduate Education



ETD Goals

- ◆ Students learn about electronic publishing and digital libraries
- ◆ Timely technology and knowledge sharing
- ◆ Universities unlock the potential of their intellectual property and products
- ◆ Improve library services



NDLTD Consortium

- ◆ Most members have only implemented preliminary studies or pilot programs
- ◆ Need more academic institutions to require ETD submissions
- ◆ NDLTD vision of globally federated digital library of graduate research



Program Considerations

- ◆ ETD server & software
- ◆ Web information site
- ◆ Administrative policy & task force
- ◆ Public relations
- ◆ Training & information
- ◆ Computer lab assistance
- ◆ Technical support
- ◆ Access to ETDs



Support Elements Necessary for Successful Implementation

- ◆ Top level administration
- ◆ Graduate School
- ◆ University Library
- ◆ Faculty
- ◆ Students



How to Achieve Support

- ◆ Information technology implementation
- ◆ Recruit implementation team
- ◆ Develop networking
- ◆ Educate
- ◆ Promote and publicize
- ◆ Engage discussion
- ◆ Design careful planning
- ◆ Build support infrastructure
- ◆ Set reasonable timeline for implementation



WVU Team Collaboration

- ◆ **Office of Academic Affairs and Research**
 - ◆ Provost, Office of Graduate Education
 - ◆ Decentralized graduate programs
- ◆ **ETD Task Force**
 - ◆ Planning, Policy, Administration, Education, & Technology Issues
- ◆ **Office of Information Technology**
 - ◆ Student technical support, labs, workshops, Web resources
- ◆ **Academic Computing**
 - ◆ Database implementation, archiving
- ◆ **University Libraries**
 - ◆ Advising, Web resources, submissions review, cataloging, reference & document delivery services, archiving



Strategic Directions

- ◆ Engage Students
- ◆ Empower Faculty
- ◆ Infuse Curriculum
- ◆ Enhance Research Capabilities
- ◆ Fulfill Duty to Serve
- ◆ <http://www.wvu.edu/~cir/plan/empower.pdf>



Engage Students & Empower Faculty: Infuse the Curriculum

- ◆ New & Expanded Computing Labs, Wireless Networks, Computing Services, Multimedia Classrooms
- ◆ Technology Training for Students and Faculty
- ◆ Student Systems: Star E-Enrollment, Online Faculty Evaluation
- ◆ Distance Education Options, Web-CT Development, Faculty Workstations
- ◆ ITRC: Multimedia Development Facilities, Academic Support, Curricular Web Services
- ◆ Faculty Grants, College Support of Faculty
- ◆ **University Libraries Electronic Information Resources: Online Reference and Full-Text Journals, E-Document Delivery, E-Reserves, ETDs, Digital Special Collections, HD-TV, Digital Web-casting**



Enhance Research Capabilities & Fulfill the Duty to Serve

- ◆ Software Engineering Programs: ISR, NASA, FBI NFL, VRL
- ◆ **WVU / FBI Forensic Investigation B.S. Program**
- ◆ Online Extension Service Activities: Local, State, Regional, National, Global
- ◆ Health Sciences Services: WVU Healthline, Consult, MDTV, Workforce Development
- ◆ Economic Development Activities: Rapid Technology Transfer Program, MountainMade[®] Online Artisan Store, WV Human Resource & Economic Development Council Initiatives, WV Clearinghouse for Workforce Education
- ◆ **International Telemedicine Collaboratory: Weapons of Mass Destruction Database & Network**



Related IT Developments

- ◆ Oracle / Human Resources Software
- ◆ Internet-2 Consortium Member
- ◆ VR Immersa-desks & Cave
- ◆ High Performance Connections – vBNS / ATM
- ◆ Assistive Technology Lab
- ◆ **WVU ESRA**
- ◆ Data Center / Deep Blue & Gold IBM
- ◆ Oracle Academic Initiative
- ◆ Cisco Systems Partnership
- ◆ OIT Internship Program



WVU ETD Implementation Case Study

- ◆ Costs
- ◆ Benefits



Collection Maintenance

- ◆ WVU Academic Computing
 - ◆ Server and maintenance: (.3 fte; existing personnel utilized)
 - ◆ Dell 40 GB hard drive, Windows NT OS, initial programming, archiving routine



Education

- ◆ WVU Workshops / OIT Consultants:
 - ◆ 1.0 fte; rotates among 4 consultants existing personnel utilized
- ◆ ETD Document Preparation and Conversion
 - ◆ OIT Customer Support
- ◆ ETD Program Overview and Submission Process
 - ◆ University Libraries
 - ◆ 1/3 of reviewer's time spent advising, teaching seminars



University Libraries / Technical Services Division

- ◆ Submissions Review (Acquisitions Dept.)
 - ◆ 1.0 fte; existing personnel utilized): Technical Consultant and occasional backup (equivalent to submission & review by graduate school)

- ◆ Cataloging (Cataloging Dept.)
 - ◆ 1.5 fte; existing personnel utilized:
 - ◆ Cataloging Librarian, Library Technical Assistant
 - ◆ Cost reductions for binding, handling, shelving
 - ◆ \$6.00/ dissertation binding unit: Savings of \$1,000 annually
 - ◆ Minimal Handling: no book processing required
 - ◆ Savings of 1,000 linear ft. of Shelf space annually



WVU Libraries / Public Services Division

- ◆ Reference / Document Delivery:
 - ◆ Existing personnel utilized; minimal impact; required initial training, augmented use of electronic delivery & copy services



Costs to Students

- ◆ Master's Theses:
 - ◆ \$55.00 submission fee
 - ◆ UMI submission + \$10 archiving fee
 - ◆ \$45.00 copyright fee optional
- ◆ Doctoral Dissertation:
 - ◆ \$65.00 submission
 - ◆ UMI submission + \$10 archiving fee
 - ◆ \$45.00 copyright fee optional
- ◆ Many departments still request traditional bound copies
- ◆ Some departments now accepting copies on CD-ROM



Web Distribution Options: Student Submits ETD Online

- ◆ WVU Web Distribution Options

1. World
2. Campus Only
3. Campus Encrypted
4. No Access



Realities of Digital Publishing

- ◆ Student Publishing Concerns
 - ◆ How have publishers reacted to articles from ETDs?
- ◆ University Tenure Systems and Digital Publishing
 - ◆ Digital publishing is now being recognized basis of granting tenure and promotion to university faculty



Web Posting Is Not Prior Publication

- ◆ Role of journal as disseminator and archive for the academic record
- ◆ Role of journal as peer review
- ◆ Redundancy is part of long-term educational process
- ◆ Self-acknowledged archiving
- ◆ Economics will convince publishers to adopt liberal Web policies



Survey results from Virginia Tech 1997 - 1999

◆ Access Status

- 48% World Access
- 33% Campus Only
- 19% No Access

◆ Graduate Student Survey

- 78% limit access on faculty advice
- 13% limit access on publisher advice

◆ Alumni Surveys

- 43% successfully published derivative works
- **100% found no resistance from publishers**



Evidence from WVU ETD Program

- ◆ 1998 World Access: 56%
- ◆ 2000 World Access: 62%
- ◆ 2002 World Access: 73%



“Published” status = peer review

- ◆ Prior publication (i.e. Web distribution) is discipline dependent
 - Physical Sciences: non-restrictive
 - Life Sciences: emphasis on level of access
 - Medical Sciences: emphasis on level of access
 - Social Sciences: emphasis on revision of content
- ◆ Conclusions: Myth and tradition from print media creates misperception in digital media



Library Access to ETDs

- ◆ Citation from the catalog
- ◆ Online Full-text
- ◆ Document delivery services
- ◆ ProQuest (UMI)
- ◆ NDLTD



Library Access to Restricted ETDs

- ◆ Campus Only ETDs
 - Electronic files free via Inter-Library Loan
 - Printed copies for a fee via Library Copy Services
- ◆ Campus Encrypted ETDs
 - Available in print format only
- ◆ Restricted ETDs
 - Secured until patent / proprietary concern has been resolved

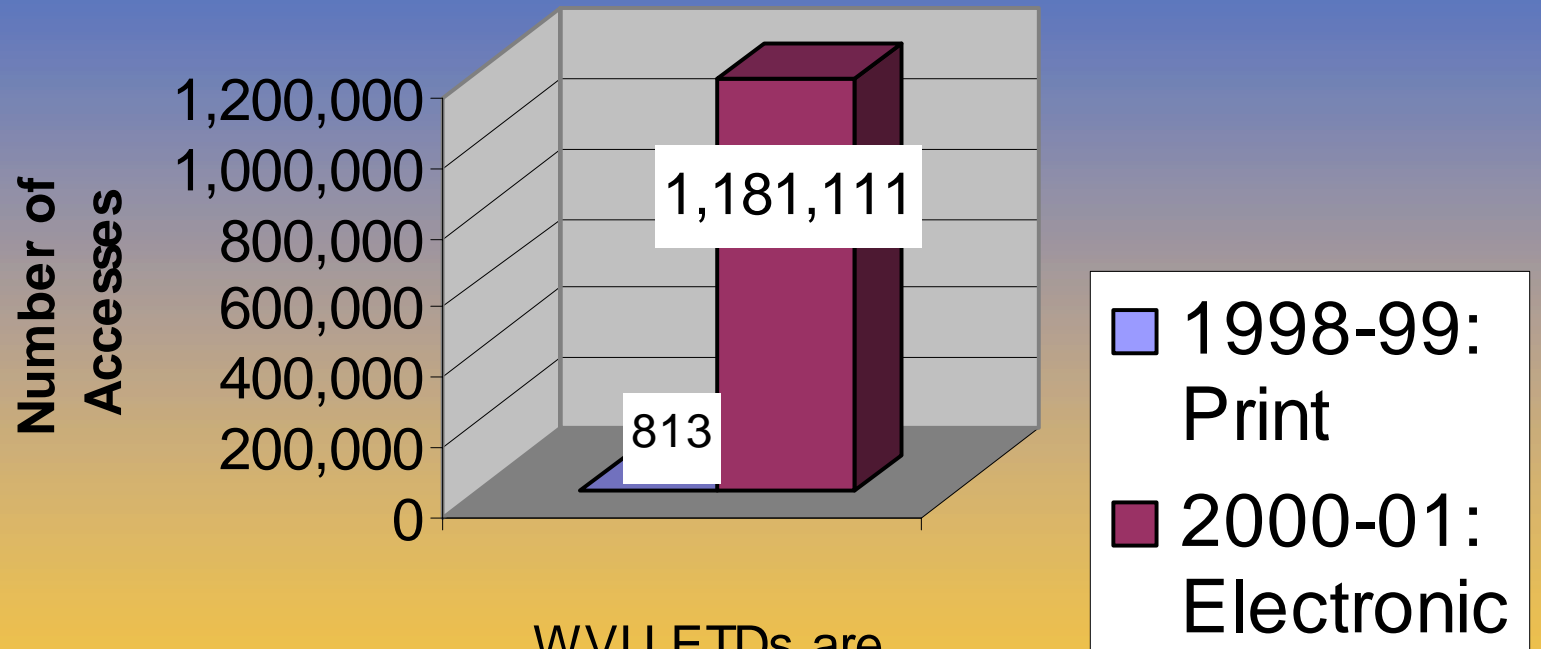


WVU ETD Collection Profile

- ◆ T&D Circulation vs. ETD Web Distribution
- ◆ Monthly ETD Accesses
- ◆ ETD Searches & Browsers
- ◆ ETDs Accessed
- ◆ Most Popular ETD
- ◆ Total Number of ETDs in Collection
- ◆ Web Distribution Types
- ◆ Format Types in Collection
- ◆ Number of Submissions per Year



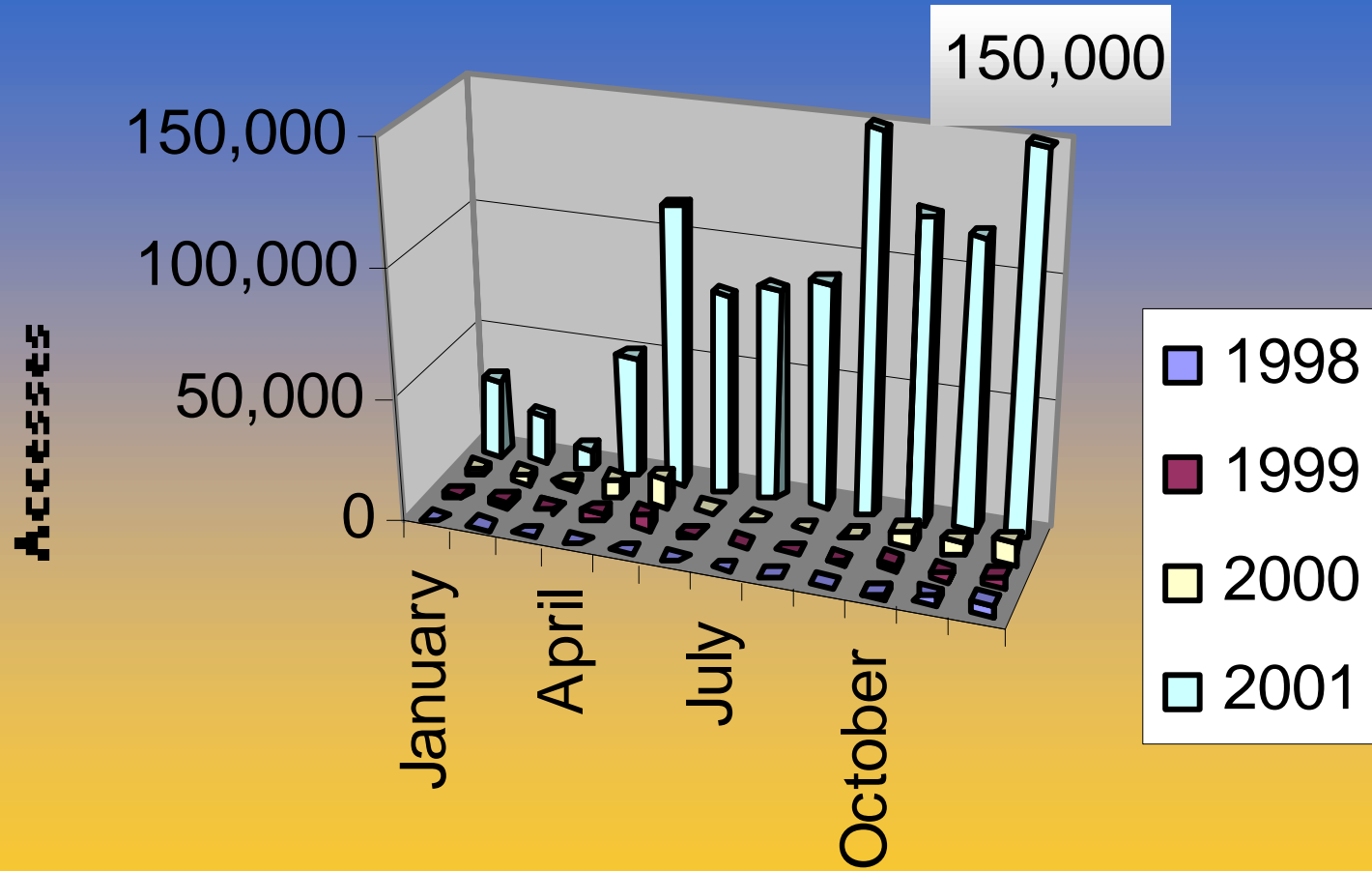
WVU Print vs. Electronic Thesis & Dissertation Access



WVU ETDs are accessed **145,000%** more than print documents

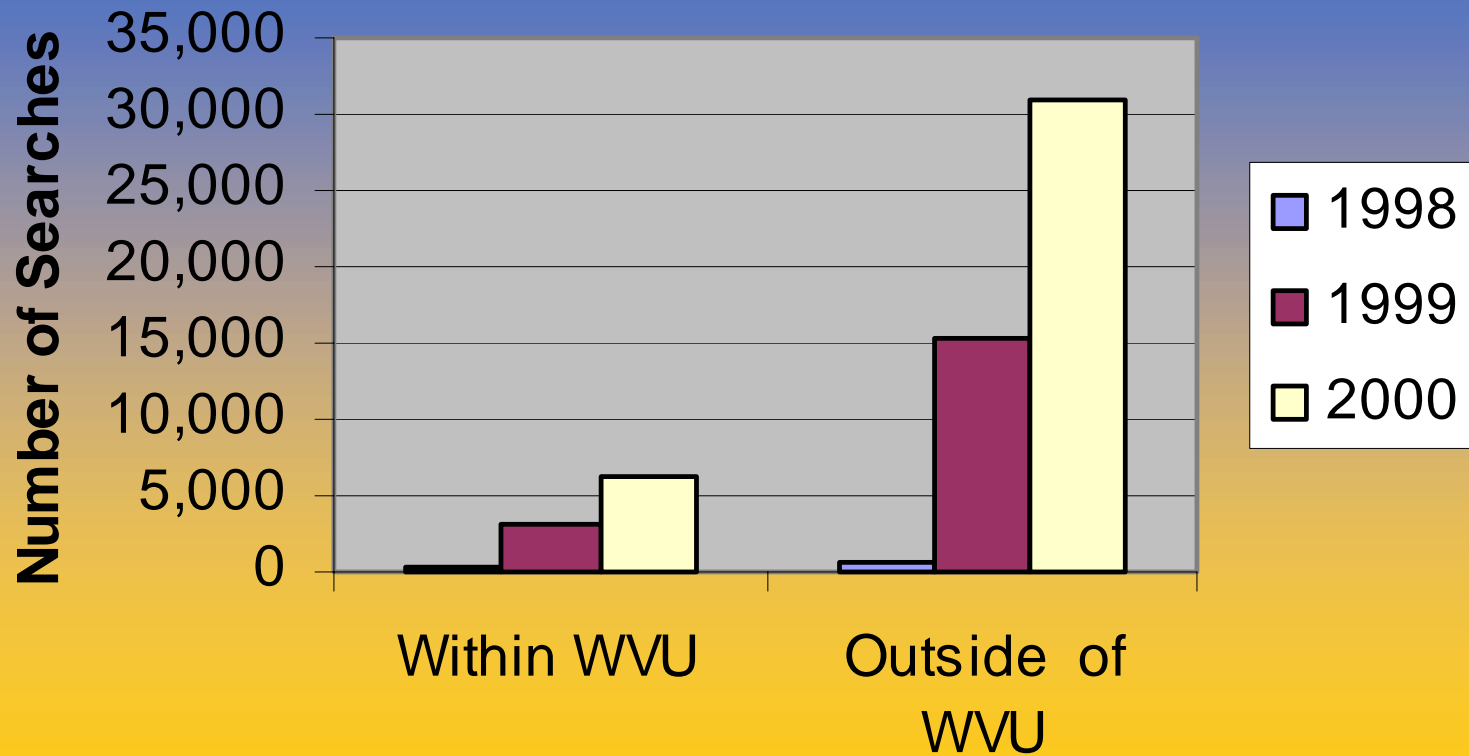


WVU ETD Monthly Accesses



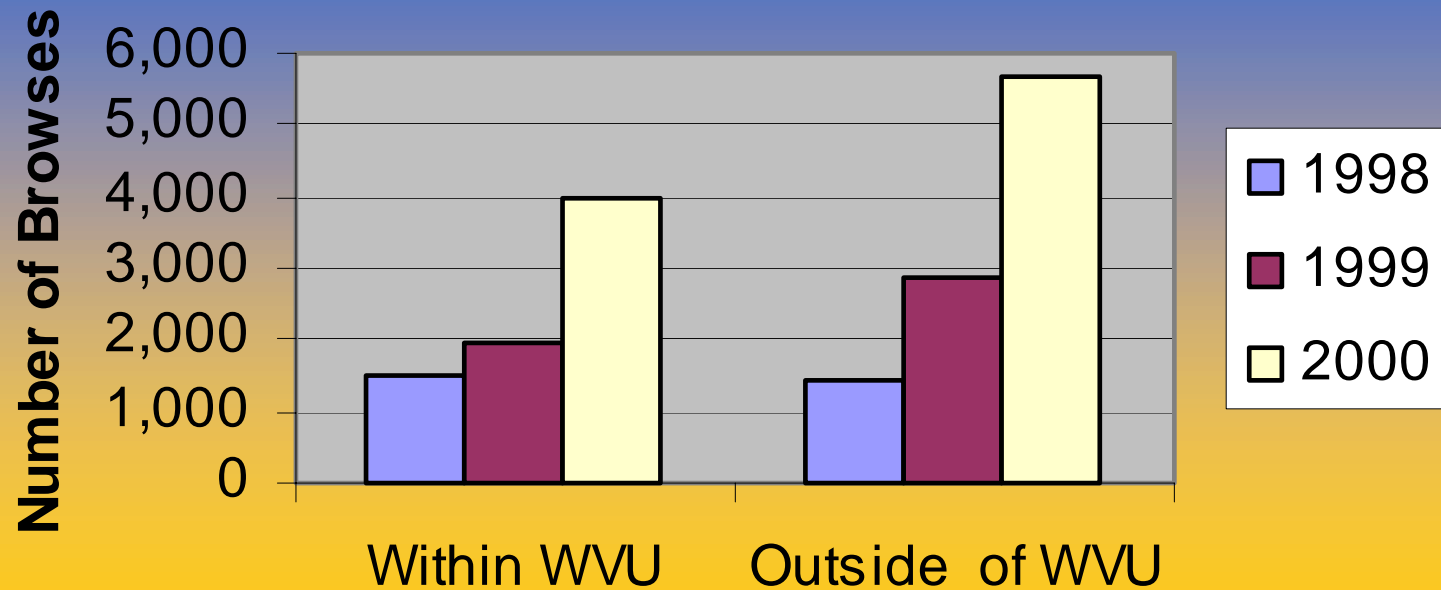


WVU ETDs Searched



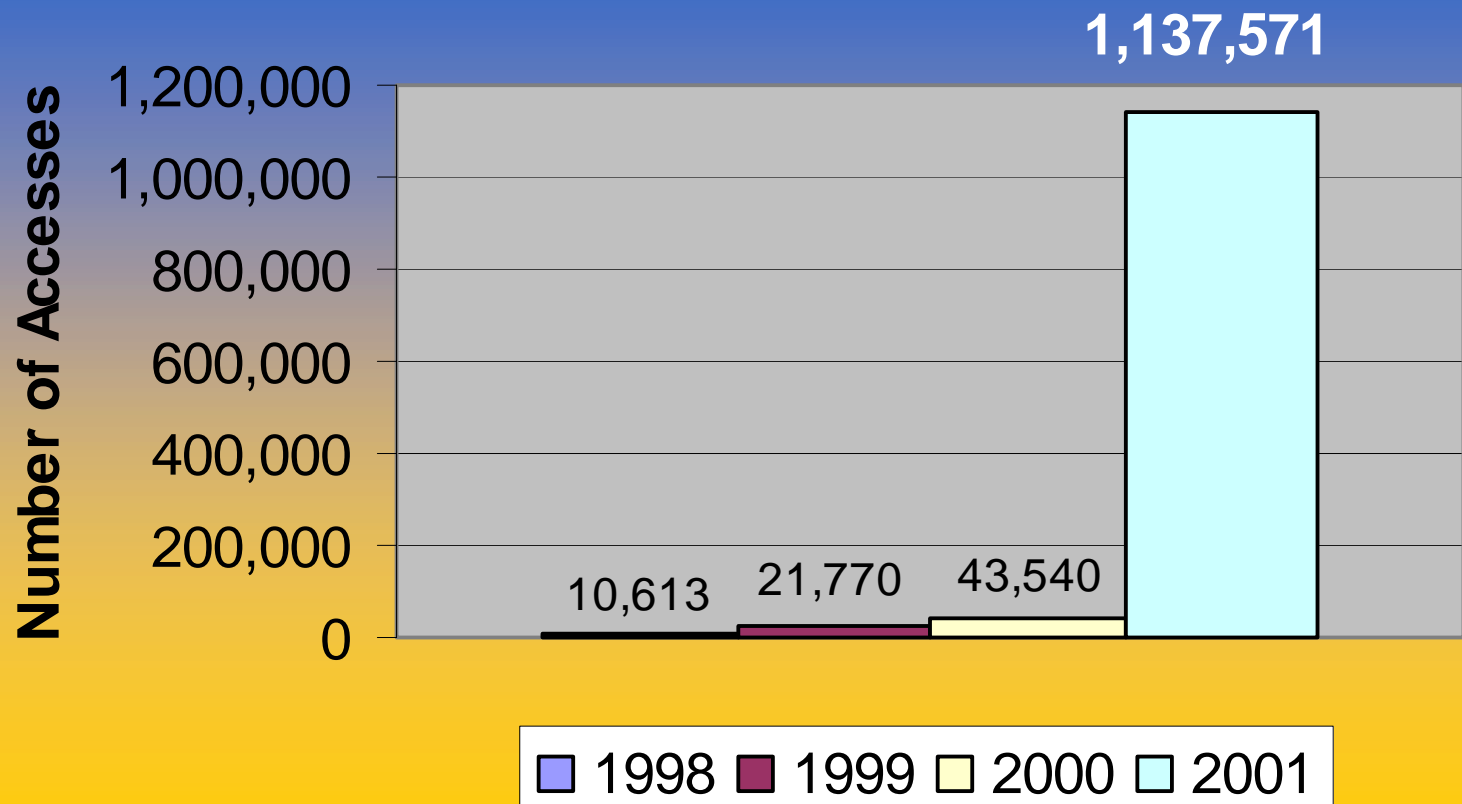


WVU ETDs Browsed



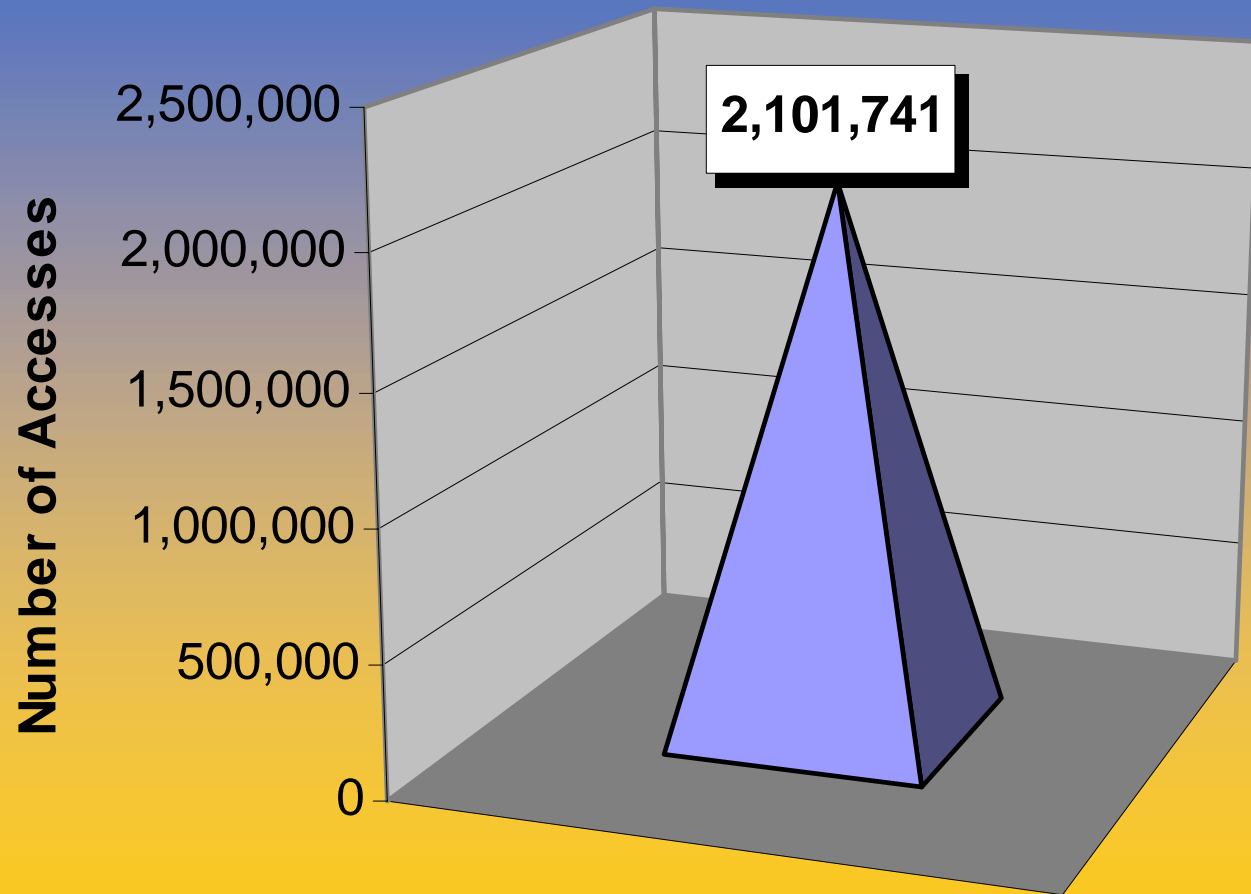


Overall WVU ETD Accesses





Total WVU ETD Accesses: 1998 - Present



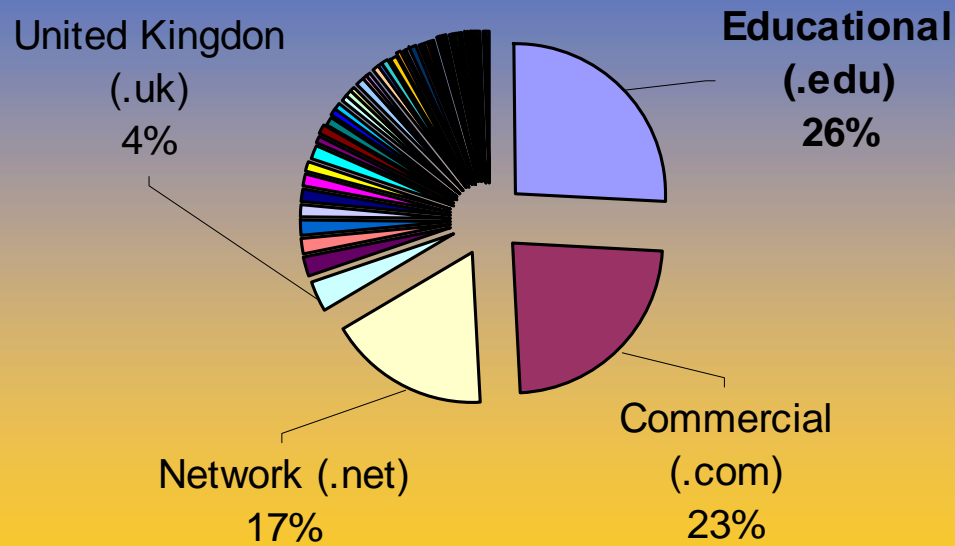


WVU ETD Server Statistics					
Breakdown by Geographical Location					
Domain Name	Hits	Percentage			
Commercial (.com)	43,210	25.414%	Egypt (.eg)	219	0.129%
Educational (.edu)	40,957	24.089%	China (.cn)	217	0.128%
Network (.net)	28,533	16.782%	Czech Republic (.cz)	212	0.125%
United Kingdon (.uk)	6,060	3.564%	Hungary (.hu)	191	0.112%
Germany (.de)	3,709	2.181%	Trinidad and Tobago (.tt)	170	0.100%
Singapore (.sg)	3,275	1.926%	Slovakia (Slovak Republic) (.sk)	163	0.096%
Australia (.au)	2,787	1.639%	Peru (.pe)	161	0.095%
Spain (.es)	2,525	1.485%	Colombia (.co)	129	0.076%
Italy (.it)	2,480	1.459%	Jordan (.jo)	127	0.075%
France (.fr)	2,476	1.456%	Estonia (.ee)	127	0.075%
Japan (.jp)	2,342	1.377%	Lithuania (.lt)	124	0.073%
Canada (.ca)	2,183	1.284%	Brunei Darussalam (.bn)	120	0.071%
Malaysia (.my)	2,055	1.209%	Lebanon (.lb)	119	0.070%
United States (.us)	1,833	1.078%	Philippines (.ph)	102	0.060%
Government (.gov)	1,578	0.928%	Ukraine (.ua)	101	0.059%
Greece (.gr)	1,313	0.772%	Korea, Republic of (.kr)	100	0.059%
Belgium (.be)	1,308	0.769%	Costa Rica (.cr)	78	0.046%
Military (.mil)	1,274	0.749%	Bulgaria (.bg)	78	0.046%
Russian Federation (.ru)	1,212	0.713%	Namibia (.na)	70	0.041%
Brazil (.br)	1,210	0.712%	Yugoslavia (.yu)	61	0.036%
Indonesia (.id)	1,182	0.695%	Macedonia (.mk)	42	0.025%
Netherlands (.nl)	1,167	0.686%	Tanzania (.tz)	35	0.021%
Old ARPA-net (.arpa)	1,167	0.686%	Bosnia and Herzegowina (.ba)	35	0.021%
Portugal (.pt)	958	0.563%	Guatemala (.gt)	34	0.020%
Non-profit Organization (.org)	951	0.559%	Iceland (.is)	27	0.016%
Taiwan, Republic of China (.tw)	914	0.538%	Uruguay (.uy)	26	0.015%
Ireland (.ie)	902	0.531%	Belarus (.by)	26	0.015%
Turkey (.tr)	671	0.395%	Mauritius (.mu)	26	0.015%
Israel (.il)	655	0.385%	Dominican Republic (.do)	25	0.015%
India (.in)	571	0.336%	Yemen (.ye)	18	0.011%
Finland (.fi)	543	0.319%	Cuba (.cu)	18	0.011%
Mexico (.mx)	521	0.306%	Venezuela (.ve)	15	0.009%
Saudi Arabia (.sa)	519	0.305%	Honduras (.hn)	14	0.008%
Romania (.ro)	469	0.276%	Bhutan (.bt)	14	0.008%
Switzerland (.ch)	466	0.274%	.int	12	0.007%
Slovenia (.si)	466	0.274%	Oman (.om)	11	0.006%
Argentina (.ar)	462	0.272%	Malta (.mt)	11	0.006%
Croatia/Hrvatska (.hr)	461	0.271%	Pakistan (.pk)	9	0.005%
Chile (.cl)	435	0.256%	Iran (Islamic Republic of) (.ir)	9	0.005%
Sweden (.se)	431	0.253%	Moldova, Republic of (.md)	9	0.005%
New Zealand (.nz)	400	0.235%	Ecuador (.ec)	8	0.005%
Poland (.pl)	368	0.216%	Latvia (.lv)	8	0.005%
Thailand (.th)	359	0.211%	United Arab Emirates (.ae)	7	0.004%
Austria (.at)	347	0.204%	Fiji (.fj)	7	0.004%
South Africa (.za)	346	0.203%	Zimbabwe (.zw)	5	0.003%
Cyprus (.cy)	332	0.195%	Nicaragua (.ni)	5	0.003%
.host	310	0.182%	Former USSR (.su)	5	0.003%
Hong Kong (.hk)	303	0.178%	Cambodia (.kh)	4	0.002%
Denmark (.dk)	298	0.175%	Totals	170,026	100.000%
.	253	0.149%			
Norway (.no)	246	0.145%	Total Locations: 100		
Viet Nam (.vn)	233	0.137%	Nations Represented: 93		

- ◆ 100 Domains
- ◆ 93 Countries



WVU ETD Access by Geographical Domain

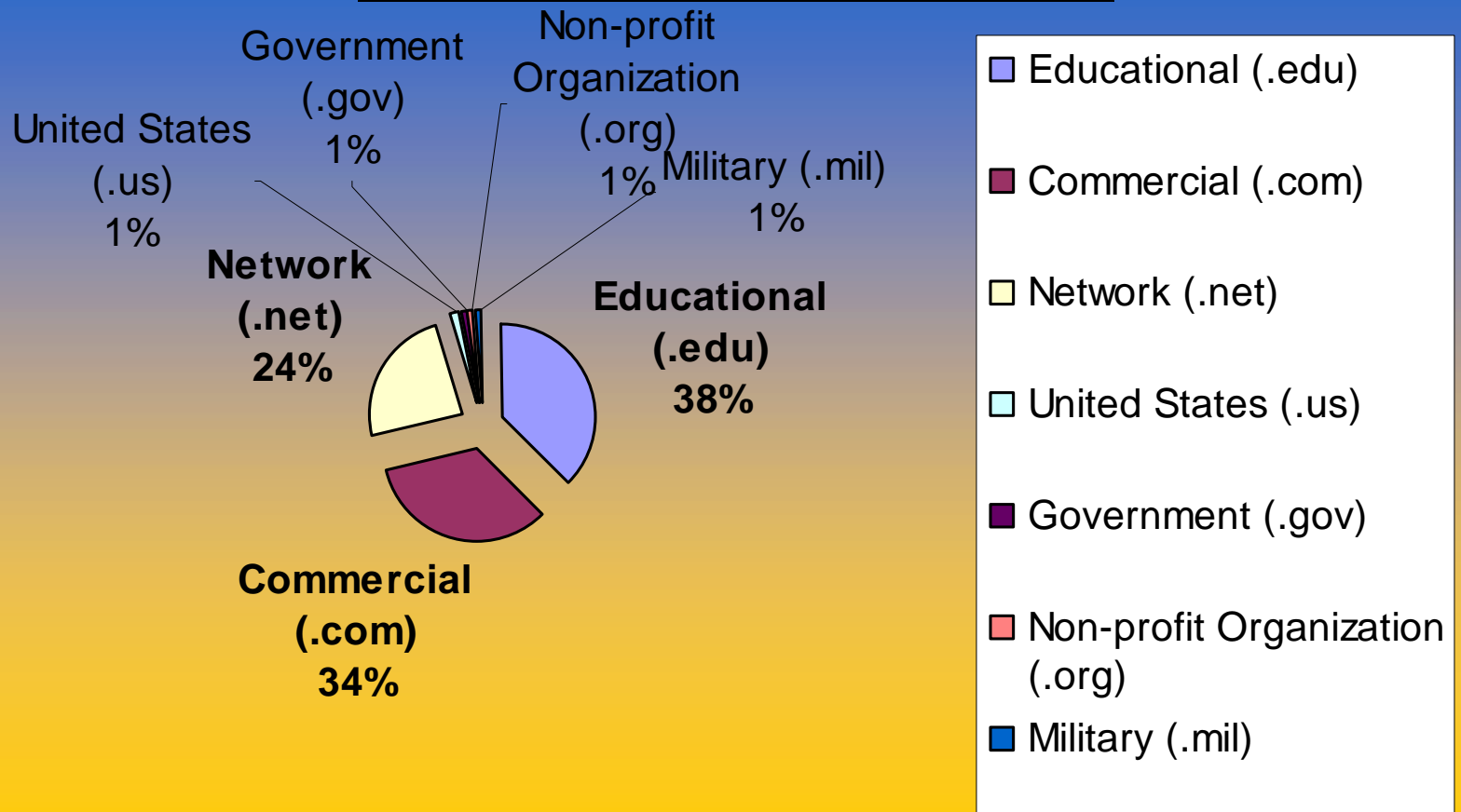


- Educational (.edu)
- Commercial (.com)
- Network (.net)
- United Kingdom (.uk)
- Germany (.de)
- Australia (.au)
- Canada (.ca)
- Italy (.it)
- Japan (.jp)
- France (.fr)

- ◆ 65% Domestic
- ◆ 35% Foreign

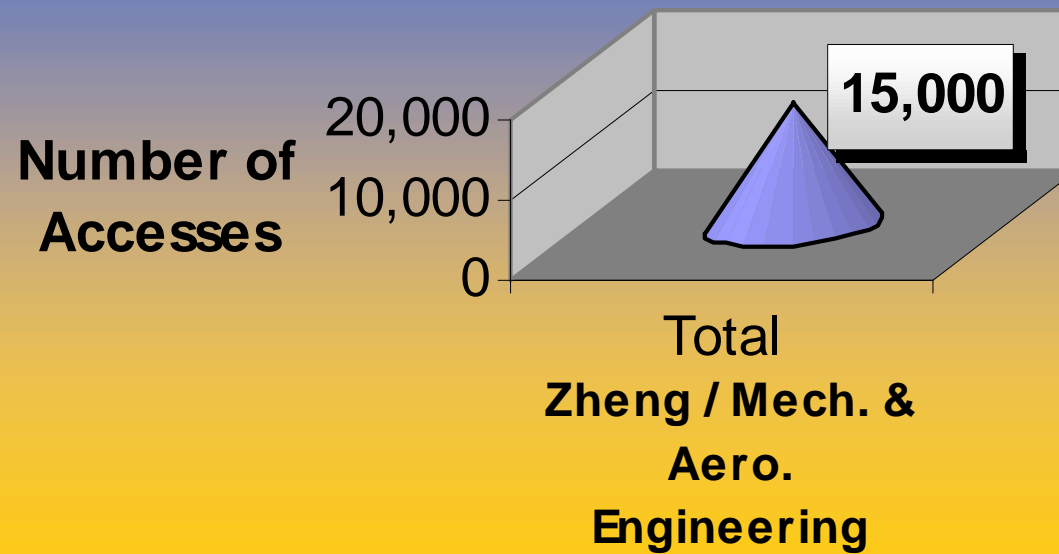


WVU ETD Access by U.S. Domain



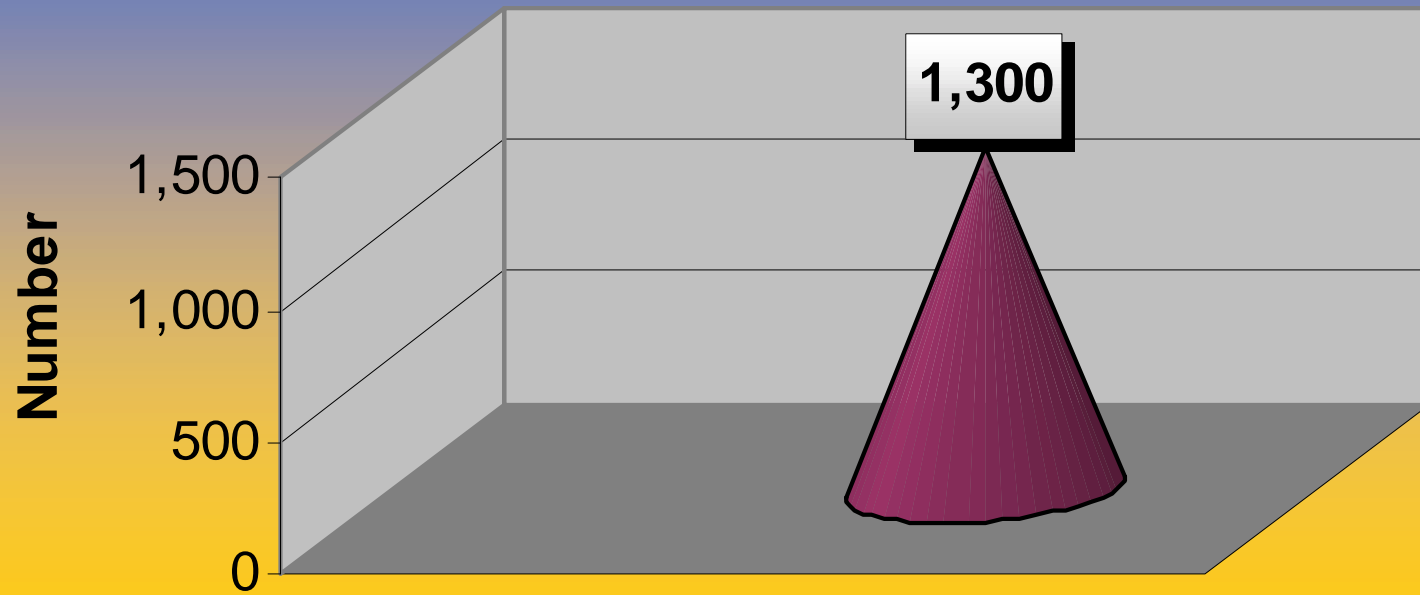


WVU ETD Most Accessed January 2001 - May 2002



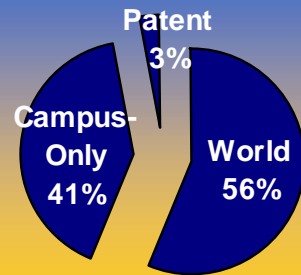


Total WVU ETDs as of Spring 2002

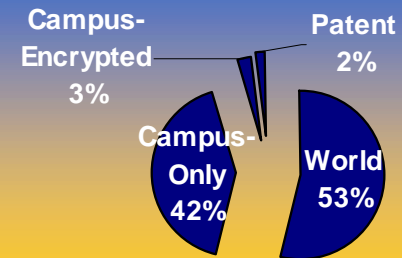




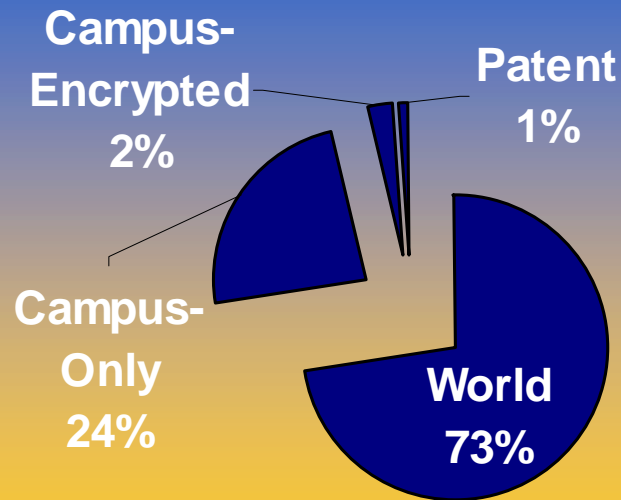
Web Distribution of WVU ETDs: 1998



Web Distribution of WVU ETDs: 1999

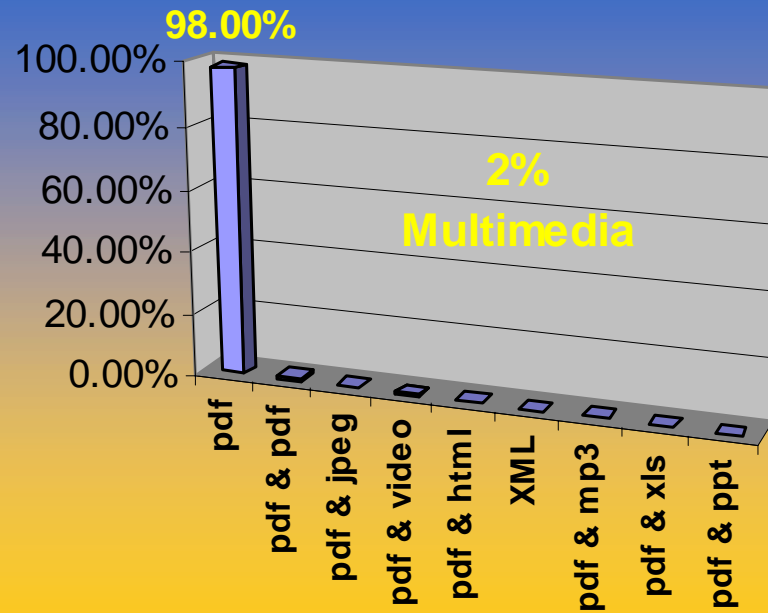


Web Distribution of WVU ETDs: Spring 2002





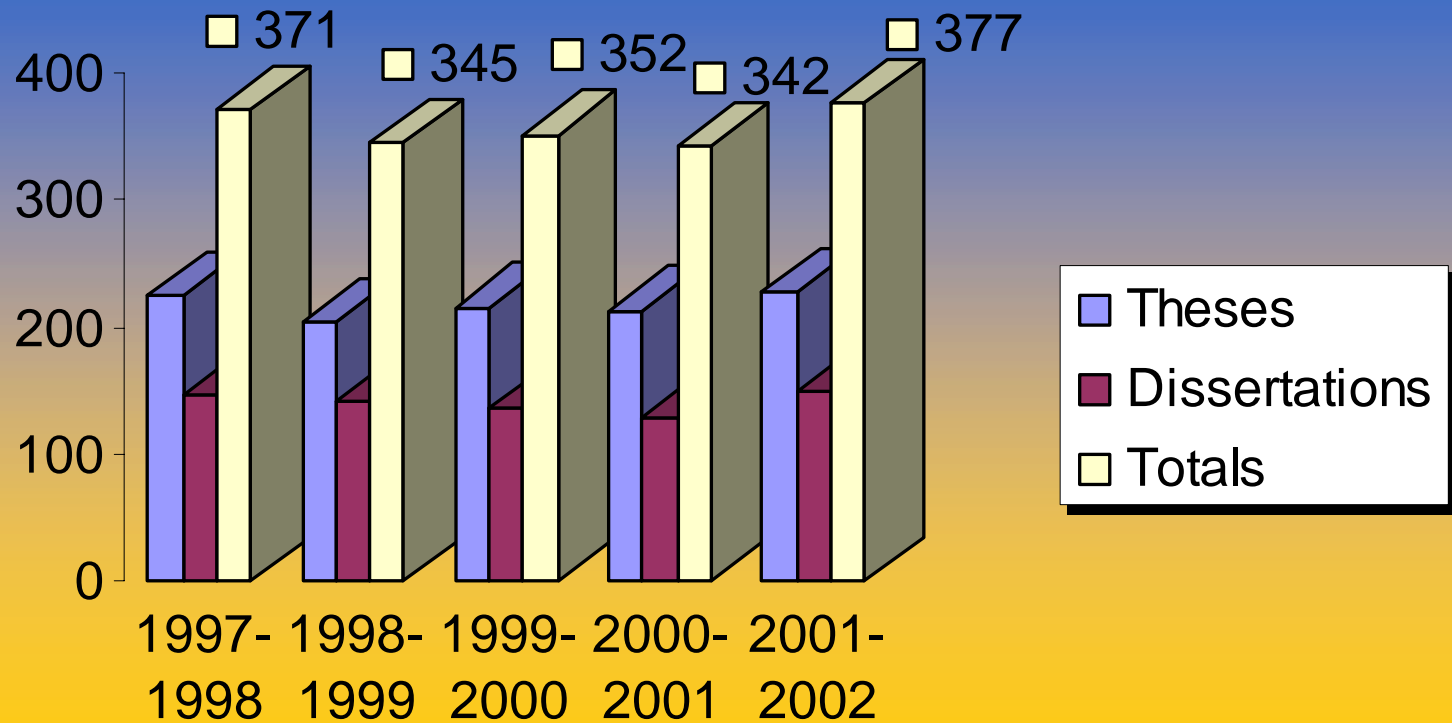
WVU ETD Format Types as of Spring 2002




http://www.wvu.edu/~thesis/Statistics/WVU_Multimedia_ETDs.htm



WVU ETD Submissions





New and Forthcoming ETD Program Features

- ◆ Students Market Research on the Web
 - Dynamic Addenda
 - Hit Counters for Individual ETDs
- ◆ Multimedia Incentives
 - Stipends
- ◆ Automated Approval System
 - Chair & Library
- ◆ Automated Batch Uploads to UMI
- ◆ Web Based Library OPAC
 - Click-able URLs to ETD Collection



Positive Outcomes from Implementation

- ◆ Heightened sense of awareness on campus of the profound effects of information technology
- ◆ Rapid Technology Transfer:
 - ◆ Transforming West Virginia's economy
 - ◆ Providing research access to the world

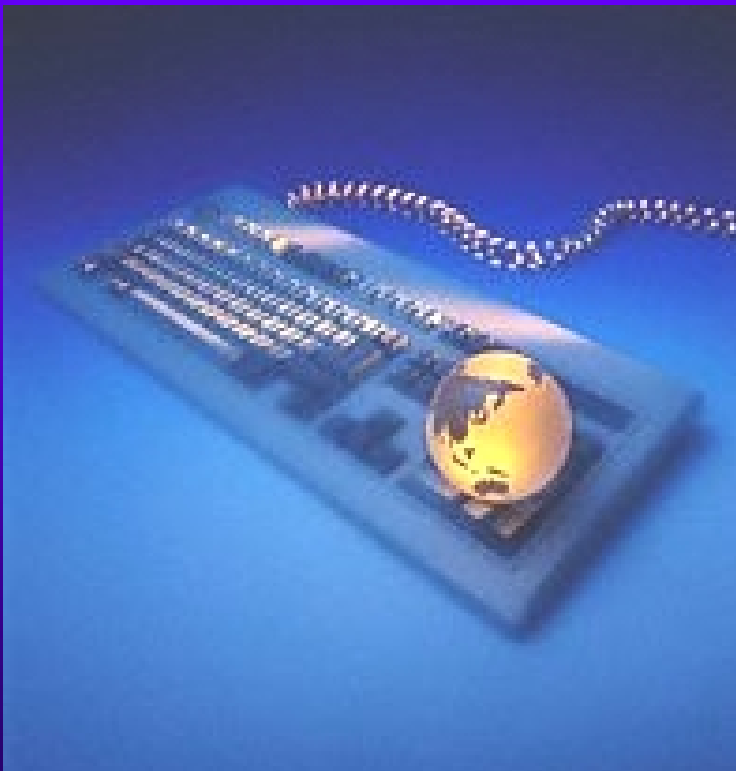
WVU ETD Web Site



www.wvu.edu/~thesis/

WVU Electronic Theses and Dissertations

<http://www.wvu.edu/~thesis/>



Presented at the
2002 ETD Symposium
Brigham Young University
Provo, UT
30 May 2002

John H. Hagen
West Virginia University
John.Hagen@mail.wvu.edu