satellite and open-source software in schools in South Africa and in the rural areas in general.

It was indicated in the literature review for this study that one of the most formidable challenges to the use of ICTs in developing countries, especially in Africa, was the challenge of ownership of knowledge and knowledge products. This study recommends that research be conducted to establish the extent to which Africans are being alienated from their way of life or otherwise because of their lack of control of the knowledge systems and products that are being used in the name of globalisation and a knowledge economy. Perhaps the question to investigate is, to what extent are African communities, and particularly those in South Africa, thinking global and acting local?

List of references

1. Addo, H. 1999. An investigation into the role of microcomputers as information retrieval tools in the Greater Pietermaritzburg Schools' Water Audit projects. MIS Thesis. Pietermaritzburg: Department of Information Studies, University of Natal.

2. Addo, H. 2001. Utilization of Information and Communication technology for Education. *IFLA Journal* 27(2001):141-151.

3. Aitchison, J. 1998. Access to books and journal articles by post-graduate students on a course-work Masters' programme in Information Studies at the University of Natal,

Pietermaritzburg. MIS Thesis. Department of Information Studies, University of Natal.

4. Arnall, C. 1995. Cooperative programme planning, Multimedia heroes at Genazzano Junior School. *ACCESS* 9 (3): 21-23.

5. Asmal, K. 1999. Call to action: Mobilizing citizens to build a South African education and training system for the 21st century. An electronic mail notice to staff. University of Natal. 10 August 1999.

6. Barclay, D. 1996. *Teaching electronic information literacy. A how to do it manual.* New York: Neal-Schuman.

7. Bauden, D. 1990. *Managing user-centred libraries and information services*. Aldershot: Gower.

8. Beauchamp, A. 1995. Uganda's schools: Do they need computers? In Tinsley D. and van Weert (Eds). *World Conference on Computers in Education V1 (WCCE 95) Liberating the learner. Proceedings of the Sixth IFID World Conference on Computers in Education*. London: Chapman and Hall. 194-201.

9. Behrens, S. 1995. Life-long learning in the new education and training system. *Mousaion*, 13 (1&2): 250-263.

10. Beswick, N. 1988. The use of knowing interactive models of school library. *School Librarian*, 36 (1): 6-9

11. Bigum, C. 1997. Teachers and computers: In control or being controlled? *Australian Journal of Education,* 41 (3): 247-261.

12. Blacquiere, 1989. Reading for survival: Text and the second language student. *South African Journal of Higher Education,* 3 (1): 73-83.

13. Bless, C. and Higson-Smith C. 1995. *Fundamentals of Social Research Methods: An African perspective*. 2nd ed. Juta: Kenwyn.

14. Borman, J. 1995. Computers huh? Computer skills as part of the curriculum. *Information Technology review*, 2:30-31.

15. Bot, M. 1999. The development of quality indicators at school level. *Edusource Data* News, 26:1-16.

16. Bot, M. 2001. School Register of needs 2000: An update, *Edusource Data News* 35, 1-4

17. Bouwer, A. 1998. An integrated book-based computer assisted model to develop meta-cognitive reading strategies of all South African learners. *South African Journal of Education,* 18 (4): 225-231

18. Busha C. and Harter S. 1980. *Research methods in librarianship: techniques and interpretation*. New York: Academic Press.

19. Campbell, L. 1996. Students or teachers? Who should our targets be? *ACCESS*, 10 (4): 14-16.

20. Carbo, T. 1997. Mediacy: Knowledge and skills to navigate the information highway. *International Information & Library Review*, 29:393-401.

21. Caroll, C. 1998. National Network to link 28,000 schools. In *Computing SA: incorporating computer world*, 18 (41): 1-14

22. Cawkell, T. 1998. The information age-for better or for worse. *Journal of Information Science,* 24 (1): 56-58.

23. Clyde, A. 1995. Computers in school libraries: The Internet and Australian schools.

ACCESS, 9 (2): 26-28.

24. Clyde, A. 1997. Information skills in an age of information technology. *Emergency Librarian,* 24 (4): 48-50.

25. Collis, B. and Carleer, G. 1993. The effects of technology-enriched school intervention: A multiple case study analysis. *Computers and Education*, 21 (1-2):151-162.

26. Davidson, J. and Rees-Mogg, P. 1997. *Sovereign individuals*. London: Macmillan.

27. De Horowitz, G. 1993. Literacy and development in the third world: Could Librarianship make a difference? *IFLA Journal*, 19 (2): 170-180.

28. de Moura Castro, C. 1999. Education in the information age: promises and frustrations. *Technologia: International journal of technologies for the advancement of Knowledge and learning*, Vol. 1 (2): 39-43.

29. De Vaus, D. 1991 *Surveys in Social Research.* 3rd ed. London, Unwin.

30. De Villiers, M. 1998. Instructional theories of experts: a practical implementation. *South African Journal of Higher Education*, 12 (3): 04-213.

31. DiNucci, D. Guidice, M. and Stiles, L. 1998. *Elements of web design. 2nd ed.* Berkeley, Peachpit.

32. Edelstein, D. 1995. Multimedia: The new age classroom. *Intelligence*, February, 46-57.

33. Edelstein, D. 1995. Multimedia: Will the information superhighway run through our schools? *Intelligence*, March 44-49.

34. Eisenberg, M. 1992. Current Research. *School Library Media Quarterly*, 20: 103-109.

35. Eyitayo, S. 1996. Securing your system against virus attack: the experience of a medical library in Nigeria. *Information Development*, 12: 215-217.

36. Falkenberg, R. 2000. Meeting the IT training challenge. *Sunday Times Business Times*. July 16:2.

37. Flagg, G. 1997. Hacker, virus shut down libraries' online services. *American Libraries*, 28(1):16-17.

38. Fouche, J. 1995. An interactive Multimedia Program for the teaching of electrical Principles to Senior Secondary pupils. Masters Thesis, Pretoria Computer Assisted Education University of Pretoria.

39. Gates, B. 1994. Multimedia technology and education: Progressive products and powerful promises. *Booklist*, 90:

40. Gay, L. 1976. *Education research: Competencies for analysis and application.* Columbus, Ohio: Merill.

41. Gilstrap, D. 1998. Managing World Wide Web information in a frames environment: A guide to constructing Web pages using frames. *Library software review*, 17 (4):270-276.

42. Gitnner, A. 1998. Using the Internet in Schools. Some general thoughts and implications. <Http://edweb.cacamcnty.gov.ukhinchinbrooke/Homepage/using htm.

43. Goldman, S. Cole, K, Syer, C. 1999. The technology/Content dilemma. Paper presented at the Secretary's Conference on Educational Technology. Http://www.ed.gov/Technology/TechConf/1999whtepapers.html January 2001.

44. Gordon, D. 1997. Wired learning: Education caution. *Intelligence*, September 38-40.

45. Govender, D. 1999. How South African school teachers understand "educational technology". *South African Journal of Education,* 19 (2):79-83.

46. Guba, E. and Lincoln, S. 1989. *Fourth generation evaluation*. Newbury Park: Sage.

47. Gwyneth, T., Poulter, A. and Hiom, D. 1996. *The Library and Information Professional's guide to the Internet*. London: Library Association.

48. Hall, B.1994. Information Technology and global learning for sustainable development: Promise and problems. *Alternatives*, 19:99-132.

49. Hawkins R. 2000 Interview with the outgoing WorLD Africa Programme co-ordinator in Washington DC. 13 January 2000.

50. Hawkridge, D. 1990. Computers in Third World Schools. The example of China. *British journal of educational technology,* 21 (1): 4-20.

51. Hawkridge D, Jaworski J. and McMahon, H. 1990. *Computers in Third World Schools. Examples, Experience and Issues.* Hound mills, McMillan.

52. Hayman, G. 1999.Academics fear what they do not know. *Mail and Guardian* May 20-June 3 1999:45.

53. Herring, J. 1996. *Teaching information skills in schools*. London: Library Association.

54. Heinecke, Walter F, Blasi Laura, Miman Natalie and Washington, Lisa (1999). New Directions in the evaluation of the effectiveness of educational technology. Paper presented at The Secretary's Conference on Educational Technology-1999.

55. Herring, J. 1996. *Teaching information skills in schools*. London: Library Association.

56. Heugh K, Siegruhn, A. & Plludemann, P. 1995. *Multimedia education for South African.* Johannesburg: Heinemann.

57. Hobart, M. 1993. (Ed.) *An Anthropological critique of development: The growth of ignorance*. London: Routledge.

58. Holland, N. 1999. Computer Course for learners.
http://www.ed.gov/Technology/TechConf/1999/whtepapers.html
http://www.uen.org/utahlink/train/manuals/basic/index.html 18 April 1999

59. Hubbard, G. 1993. Multimedia, *School Library Media Quarterly*, 21:45-48.

60. Jackman, K. 1998. Warning: Children are at risk: Hi-tech health jinx for kids. Sunday Tribune: January 25:3.

61. James, T. 2001 (Ed). *An information Policy Handbook for Southern Africa: A knowledge Base for decision-makers.* Ottawa, IDRC.

62. Johnson, D. 1995. Student access to the Internet. *Emergency Librarian*, 22 (3): 8-12.

63. Johnson, D. and Eisenberg, M. 1996. Computer literacy and information literacy: A natural combination. *Emergency Librarian*, 23:12-16.

64. Kafai, Y. and Bates, J. 1997. Internet Web-searching instruction in the elementary classroom: Building a foundation for information literacy. *School Library Media Quarterly*, 25 (2): 103-111.

65. Kalinowski-Jagau, K. 1998. Organizing and managing development information: a personal view from Germany. *Information Development* 14 (1): 21-23.

66. Karaliotas, Y. 1997. Project Report. Learning on and over the Internet: dynamics and limitations: will the new technology become the main vehicle for a learning society? Http://www.usersotenet.gr/~kar1125/education.htm> 12 November 1997.

67. Katundu, D. 1998. The use and sustainability of Information Technology (IT) in academic and research libraries in Tanzania. Ph.D. Thesis. Pietermaritzburg, Department of Information Studies, University of Natal.

68. Kirkpatrick, H. and Cuban, L. 1998. Computers make Kids-Right? *Techno Quarterly for Education and Technology* 7 (2): 1-11.

69. Kotsokoane, P. 2000. Interview with the WorLD programme co-ordinator in South Africa January 15 2000.

70. Kozma, R. 1994. Will Media influence learning? Reframing the debate. *Educational Technology research and development, 42 (2): 7-19.*

71. Kozma, R. *et al*., 1999. *World Links for Development: Accomplishments and challenges. Monitoring and Evaluation Annual Report*. California, Centre for Technology International.

72. Kozma, R *et al.* 1999. *World Links for Development: Accomplishments and Challenges. Monitoring and Evaluation Annual Report.* 1998-1999. Http://www.WorldBank.org/Worldlinks

73. Large, A., Beheshti, J., Breuleux, S. and Renaugh, A. 1994. A comparison of information retrieval from print and CD-ROM versions of an encyclopaedia by elementary school students. *Information Processing and Management*, 30 (4): 499-513.

74. Leedy, P. 1993. *Practical Research Planning and Design*. 5th Ed. New York: Macmillan.

75. Leedy, P. 1997. *Practical Research Planning and Design*. 6th ed. Columbus: Princeton.

76. Lindell, C., Masilela, P., Rapodile, J. and Strydom, N. 1990. Effects of a policy-based enrichment package on the play patterns and cognitive competence of black South African children in day care. *Unpublished Report* SOLING –16 HSRC, Pretoria.

77. Linn, M. 1996. Cognition and distance learning. *Journal of the American society for information science,* 47 (11): 826-842.

78. Lombo. S. 1998. An evaluative study of a resource within a community learning centre with particular reference to Thembalethu community Education Centre. MIS Thesis. Department of Information Studies. Pietermaritzburg, University of Natal.

79. Lundall, P. and Howell C. 2000. *Computers in Schools: A national survey of Information and Communication Technology in South African Schools*. University of the Western Cape. Education Policy Unit, University of the Western Cape.

80. Macdonald, C. 1990. Crossing the threshold into Standard Three. Report SLING-16, Pretoria: HSRC.

81. Malapile. S. 1996. The effects of media usage on the education of disadvantaged children. *Informedia*, September, 10.

82. McGhee, R. and Kozma, R. 2001. *World Links for Development Country Reports*: 1999-2000. SRI International Washington DC.

83. Mbeki. T. 1996. The information community and the developing world. Unpublished paper on the need for developing an information community in South Africa.

84. Menou, M. 1993. (Ed.) *Measuring the impact of information on development*. Ottawa:

IDRC.

85. Michell, K. 1994. Multimedia development for building knowledge structures. *School Library Media Quarterly*, 22 (111-112).

86. Morgan, K. 1995. Using the Internet. The Experience of an Amateur. *ACCESS,* 9 (3): 14-15.

87. Mossom, M. 1986. Status of computer education in Natal Schools. University Lecture, delivered at the University of Natal, Pietermaritzburg, 1 October 1986.

88. Musker, P. 1997. *OBE Theory into practice: An introductory guide*. Braamfontein: Nolwazi.

89. Mulder, J. 1993. *Statistical Techniques in Education.* Pretoria, Haum tertiary.

90. Nahl, D. and Harada, V. 1996. Composing Boolean search statements: Self-confidence, concept analysis search logic and errors. *School Library Media Quarterly*, 24 (4): 199-207.

91. *National Education Policy Investigation* (NEPI) Report 1992. Cape Town: Oxford University Press.

92. NCHE see South African National Commission on Higher education.

93. Neuman, D. 1997. Learning in a digital Library. *Library Trends*, 45 (4):687-707.

94. Nevell, R. 1993. Questionnaire. In Gilbert, W. (Ed.) *Researching Social Life. London*: Sage: 94-115.

95. O'Kennedy, F. 1995. Accepting the new technology. *Informedia,* October: 8-9.

96. Overduin, P. and De Wet, N. 1987. School Librarianship in South Africa today. *Journal of Library and Information Science* 55 (3): 172-178.

97. Powell, R. 1991. *Basic research methods for librarians* 2nd ed. Norwood: Ablex.

98. Prytherch, R. 1995. *HARRODS'S Librarians glossary: 8th Ed. 9000 terms used in information Management, Library Science, Publishing, the book trades and archive management.* Aldershot: Gower.

99. Radebe, T. 1994. Training School Librarians in South Africa: a personal view. *Innovation*, 9: 43-47.

100. Radebe, T. 1997. Experiences of teacher librarians in the workplace after completion of the school librarianship programme. *South African Journal of Library and Information Science,* 65 (4): 218-226.

101. Raseroka, K. 1997. Challenges of interactive environment in the context of developing countries in Sub-Saharan Africa. *International Information and Library review*, 29: 487-499.

102. Roos, G. 2000. Interview with the WorLD and SchoolNet South Africa consultant in South Africa January 15.

103. Ruthman, L. 1984. *Evaluation research methods: a basic guide.* London: Sage.

104. Ryan, J. 1998. Measuring costs and benefits of distance learning. *Journal of Library Administration,* 26 (1&2): 235-246.

105. Sagahyroom, A. 1995. Computer education in developing countries: The Sudan Case. *In* Tisley, D and van Weert 1995 (Eds). World Conference on Computers in Education VI (WCCE'95): Liberating the Learner. *Proceedings of the Sixth IFIF World Computers in Education.* London: Chapman.

106. Shoolbred, M. 1990. In our opinion … IT and the school Librarian. *The school librarian,* 38: 44-45.

107. Silva, M. 1995. The process of introducing Internet-based classroom projects and the role of the school librarian. *Education for Information*, 13:243-252.

108. *Skills Development Act 97, Act 1998.*

109. Skills Development levies Act, 1999.

110. *South African Institute of Distance Education Report*. Exploring the use of Internet and Satellite technologies to support the professional development of teachers: Developing appropriate learning and teaching models. <Http://www.saide.org.za.multi/m-r-report.html> 12 June 1998.

111. South African National Commission on Higher Education 1996. *National Commission on Higher Education Report: a framework for transformation*. S.I.: sn.

112. Sprainger, N. 1997. Evaluating Multimedia resources: Strategies for selection and supporting information skills development. *ACCESS*, 11 (2): 27-29.

113.Sproul, N. 1995. *Handbook of Research Methods: A guide for Practitioners and Students in Social Sciences*. 2nd Ed. Metuchen, Scare crow

114. Stadler, C. 1991. Competing visions for School Libraries in South Africa. *Innovation,* 3:15-23.

115. Steyn, S. 1994. *Modern Statistics in practice.* Cape Town. Academic Press.

116. Tinsley D. and van Weert (Eds).*World Conference on Computers in Education V1 (WCCE 95) Liberating the learner. Proceedings of the Sixth IFID World Conference on Computers in Education*.

117.Thapisa, A. and Birabwa, E. 1998. "Mapping Africa's initiative at building an Information and Communication Infrastructure" *Internet Research: Electronic*

Applications and policy, 8 (1): 49-58

118. Thomas, M. 1996. Viva the multimedia revolution. *Informedia,* September 4 and 5.

119. Thomson, J. 2000. Interview with the WorLD and SchoolNet South Africa consultant in South Africa January 15.

120. Todd, R. 1997. IT and learning a never-ending beginning. *ACCESS,* 11 (1): 11-14.

121. Tshenye, N. and Perold, H. 2000. Reflections on the OSF/SchoolNet projects in the Eastern and the Northern Province. Unpublished evaluation of SchoolNet as a project in the Eastern and Northern Province.

122. Turock, B. 1993. World Bank and Education. Recolonisation of Africa? *Matlhsedi*, 12 (1): 3-6.

123. Twine, T. 1996. Downtown in the global village, *Intelligence,* October, 16&17.

124. Van Rooyen, K. 1996. A performance evaluation of the Pietermaritzburg cluster of Theological Libraries (PCTL) in order to determine whether it meets the demands of its users. MIS thesis, Pietermaritzburg: University of Natal.

125. Welch, B. *et al.,* 1996. Victorian secondary school libraries Internet and beyond. *ACCESS*, 10(1): 12-14.

126. *World Development Indicators*. 2001. Washington DC. The World Bank.

127. *World Development Report: Knowledge for Development*.1999. New York: Oxford University Press.

128. Wyley, C. 1996. The application of a participatory evaluation method to the public library. The case of Tholulwazi Library, Besters Camp, Inanda, Durban. MIS Thesis, Pietermaritzburg. University of Natal.

129. Zulu, S. 1994. Africa's survival plan for meeting the challenges of information technology in the 1990s and beyond. *Libri* 44 (1): 77-94.