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ABSTRACT

This collection of papers describes efforts of the Westchester Teacher Education Group (WTEG) to incorporate technology into preservice teacher education curricula. Part I gives an overview of the WTEG and the activities of its task force on technology, in the following three papers: "The Westchester Teacher Education Group: History and Purpose" (Shirley L. Mow); "Concerns-Based Project Management and Support" (Barbara C. Freeouf); and "Highlights from the Evaluation of the W.T.E.G. Technology Task Force" (Margaret Honey and Cornelia M. Brunner). Part II presents revised preservice teacher education syllabi that reflect ways in which technology can be integrated into foundations courses, methods courses, student teaching/senior seminars, specialized courses, and school-based projects. The papers in Part II include: "Foundations of Education Theory" (Kevin Cawley); "Foundations of Education" (Carol Keyes); "Methods of Teaching Mathematics in Elementary School" (Sandra Flank); "Theory and Practice of Instruction" (Mildred Haipt); "Methods of Teaching Elementary School Mathematics" (Susan F. Jacobs); "Classroom Management" (Daniel B. McIlmurray); "Mathematics for the Elementary Classroom Teacher" (Lucille Peterson); "Seminar/Field Experience in Secondary School Social Studies" (Lawson Bowling); "Interactive Learning Technologies: Preservice" (Wayne D. Gray); "Educational Assessment of the Special Child" (Claire Lavin); "Technology in Elementary and Special Education" (Robert D. Postman); and "School Store Project" (Barbara Marchewka). Appendices include task force member's names and addresses, a display of the W.T.E.G. project structure, and outlines of several technology seminars. (Most papers contain references.) (JDD)

REPORT ON A
PROJECT TO INTEGRATE

Technology

INTO REQUIRED PRESERVICE
TEACHER EDUCATION COURSES
AT NINE WESTCHESTER
COLLEGES AND UNIVERSITIES:

W.T.E.G., Volume II

**THE WESTCHESTER TEACHER
EDUCATION GROUP
1991-95**

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W.T.E.G., Volume II

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Westchester Education Coalition, Inc.

The Westchester Education Coalition, Inc. is a unique partnership of schools, colleges, business, government, churches, social services, and community organizations working together to improve the quality of education in Westchester and Putnam counties, New York. The Coalition is affiliated with Westchester 2000 of the Westchester County Association, Inc. and the County of Westchester and is classified as a Secion 501(C)3 organization under the Internal Revenue Code of 1954.

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to begin to work in new ways.

Part I.

PROJECT OVERVIEWS

The Westchester Teacher Education Group (WTEG) is a four-year, four-strand project aimed at improving teacher preparation at nine Westchester colleges and universities. Selected classroom teachers from 55 area school districts were invited to participate in various parts of the project. Numerous consultants, speakers, and evaluators were also involved throughout. This part gives an overview of the history, support, and conceptual framework of WTEG's task force on technology.

One

THE WESTCHESTER TEACHER EDUCATION GROUP: HISTORY AND PURPOSE

Shirley L. Mow
Westchester Education Coalition, Inc., White Plains, New York

In 1991, the Westchester Education Coalition launched a major project aimed at bringing together faculty from nine colleges and universities in Westchester to explore ways of improving and implementing change in traditional teacher preparation. The aim of the project was to make teacher education programs in Westchester more responsive to the changing needs of today's students and the reforms going on in K - 12 schools across the country. The goal was to establish a collaborative, the Westchester Teacher Education Group (WTEG), which would identify and examine issues related to teacher education and would develop joint strategies for improvement. The project was initiated and administered by the Westchester Education Coalition and supported by a four-year grant from the DeWitt Wallace - Reader's Digest Westchester Fund of the Westchester Community Foundation.

Since 1983, when **A Nation at Risk** sounded the alarm, numerous commissions and task forces called for sweeping changes in the structure and governance of our schools and in the way children are taught. Elementary and secondary schools across the country have responded to the call for reform in varying degrees and with mixed success, but colleges and universities have been essentially absent from the movement. School reform requires action and consistent policies across all parts and levels of the educational system. Schools and departments of education -- those responsible for preparing future teachers -- have thus far, failed to meet the challenge.

The Education Commission of the States and the National Governors' Association have criticized teacher education programs for failing to adapt to the current school reform movement. **A Nation Prepared: Teachers for the 21st Century** called for higher standards for teachers that focus on what teachers need to know and be able to do. The Holmes Group recommended that university faculties become more expert educators of teachers and that schools become places where both teachers and university faculty can systematically inquire into practice and improve it. Teaching and the preparation of teachers cannot be changed in isolation. The core assumption is that if we produce more effective teachers we produce better results for students.

In response to these reform agenda, there is a call for teacher educators to provide a vision for greater quality in teaching and learning and greater responsiveness to the needs of children in the 21st century. According to another Holmes Group's report, **Tomorrow's Schools of Education: Curriculum Quality and Social Responsibility**,

> "More ambitious teaching and learning for all children is needed, but this agenda cannot be realized without significant change in the knowledge, skills, and commitments of educators. . . . . Low level basic skills conveyed through traditional methods of instruction no longer constitute the goals of education. Rather, as many educational, business, and political leaders now advocate, we must pursue a far more ambitious agenda of teaching and learning that is captured in such conceptual phrases as conceptual understanding, critical thinking, problem solving, and higher order learning."

The challenge that lies ahead for schools and departments of education, as the Holmes Group suggests, is to develop, revise and expand learning to teach based on these ambitious conceptions of teaching and learning.

This daunting challenge will place difficult demands on teachers because it calls for a departure from familar patterns in the classroom. Powerful and ingrained notions of conventional teaching and learning must be modified. More of the "brightest and the best" students need to be attracted to the field. Future teachers will be required to have a greater depth of understanding of the content they teach. Prospective teachers will need to make relevant connections between what they learn on campus and what happens in the classroom. There is also need for more clarity with regard to what knowledge is really important and integration of new research and information about students and how they learn. Exposure to teaching techniques other than the lecture format will be important because cognitive and managerial demands of instruction based on the ambitious conceptions of teaching and learning will be greater than traditional teaching methods.

As with school restructuring, reforming teacher education will not be easy. There are many obstacles. For example, professional education courses are often not valued in academe. Teaching is often perceived by faculty from other disciplines as highly simple work - presenting or passing on knowledge and keeping order. Therefore the preservice curriculum is not seen as essential to good teaching. While most everyone agrees that to raise the level of teaching quality better arts and sciences preparation are essential, it is harder to argue for change in what skills and knowledge teacher educators themselves provide most directly to prospective teachers. Other reasons why there is so little serious effort to change teacher preparation is the fact that the responsibility for teacher education is scattered within the institution. There is frequently a lack of commitment from the top and activities such as working with schools or supervising student teachers are seldom promoted or rewarded, but requires much time and energy from teacher educators, nonetheless. Futhermore, overly prescriptive state rules and regulations, and the lack of resources and time to devote to curricular revision also impede change. As John Goodlad states in his book, **Teachers for**

Our Nation's Schools, "Few matters are more important than the quality of the teachers in our nation's schools. Few matters are as neglected."

In the mid-1980s, major research universities came together with other teacher preparation institutions, as "the Holmes Group," to respond to the reform agenda. However, for reform to be effective all types of institutions that educate prospective teachers need to be involved. According to a 1988 American Association of Colleges for Teacher Education report, **Teacher Education Pipeline**, the vast majority (82 percent) of teacher education programs in the Northeast are housed in institutions that enroll less than 9,000 students. Furthermore, 70 percent of these colleges and universities are independent institutions. This means that, in the Northeast at least, a significant proportion of teachers receive their pre-service preparation from relatively small, independent institutions. Westchester County is no exception.

These institutions often face more obstacles than the major research universities when trying to respond to change. They lack critical size and resources to mount any meaningful reform initiatives. At these institutions, the primary responsibility of education faculty is teaching and supervision. Because of the emphasis on teaching, faculty are not always aware of the latest research about students and how they learn; and if they are, they frequently do not have the opportunity to take on the task of integrating the research into their courses.

Based on our interest in building partnerships for the purpose of educational reform, the Westchester Education Coalition approached all eight Westchester colleges that, at that time, 1991, offered teacher education programs with a proposal to establish a collaborative professional development project for education faculty. Established in 1984, the Westchester Education Coalition, Inc. is a unique partnership of schools, colleges, business, county government, parents, social services, and community organizations in Westchester and Putnam counties. Its primary goal is to encourage collaboration among the various constituencies for the purpose of improving education in Westchester and Putnam schools. The Coalition works with 55 school districts and 13 colleges in the two counties. The purpose of the teacher education project was to focus intensive activities on issues related diversity, technology, work-based learning, and science/mathematics, four areas of preservice teacher education the Coalition believed needed attention.

Diversity. Perhaps the most dramatic changes affecting schools and their role in society have to do with the changing demography and a changing ideology. More than ever before, those entering the teaching profession must be prepared to instruct diverse student populations. All educators will need to appreciate the complexity of cultural issues and the values of tolerance. Teachers must understand the needs and characteristics of various ethnic groups, the differences in the structure of the family and communication patterns within the family. In addition, the number of children at risk in our society is increasing. The challenge is to provide high quality education not to the few but for all.

Technology is another area that needs attention. The rapid development and increasing use of technology in business and our daily lives has profound implications for schools, yet prospective teachers are not being adequately prepared for integrating technology into the classroom. At present neither the computer science faculty, who have little knowledge of the curricula taught in the classroom nor education faculty, who are rarely familar with the use of latest technologies, are adept at preparing new teachers to integrate technology into their teaching.

Work-based learning. Another problem that has been the subject of a series of reports and initiatives throughout the country is the transition from school to an ever more demanding workplace. Higher order cognitive skills, life-long learning, working cooperatively with people in different fields and of different backgrounds, and adapting readily to a rapidly changing workplace are just some of the expectations the workplace now holds for what is taught in schools and how it is taught. But schools have yet to make any significant headway into translating these changes into educational practice.

Mathematics and science. Lastly, with international companies in science and mathematics consistently placing U.S. students at the bottom, it is clear that there is a need for fundamental change in the way mathematics and science are taught. Improvement in both the quality and quantity of math and science courses has been a major concern for the past decade. Among the most recent calls for change are the National Council of Teachers of Mathematics' new curriculum and teaching standards which recommend greater emphasis on teaching the understanding of math and problem solving, and New York State Education Department's new requirement of a minimum of six credits in math and science each for all teacher certification programs.

While the need to provide prospective teachers with knowledge in these areas has been recognized, the most common approach to addressing the problem has been to add one or more education course(s) on the subject, while leaving the exisitng curriculum unchanged. It is questionable whether the "added course approach" is effective in preparing prospective teachers for the classroom they will encounter in the future. First, these "added" courses are often offered as electives and that makes it possible for prospective teachers to obtain their credential without receiving any exposure to these areas. Second, the information (i.e. cultural diversity or work-based learning) presented in these courses is helpful, but frequently lacks depth or clarity as to how this information is used in teaching. To be effective, teacher education programs should not treat these areas as subject matter separate from other aspects of pedagogy.

In the view of the members of WTEG, diversity, technology, work-based learning, and science/mathematics are areas that ought to permeate the entire teacher education curriculum and should not be viewed as discrete subject matter to be treated as separate courses. By infusing these perspectives throughout the curriculum, education faculty, faculty from other

disciplines and generations of students and future teachers will be affected. **The goal of the project therefore was to have faculty integrate the latest research and skills in these 4 areas into required education courses in the belief that these thematics threads would lead to reforms of traditional teacher education in Westchester institutions.**

There were several assumptions for developing the project: (1) that faculty would be willing to undertake the work of reviewing and revising the curriculum if given the opportunity based on a concern for their students and their own interest in improving the quality of teaching and learning; (2) that a collaborative faculty development project would improve teaching in local colleges by stimulating renewed faculty interest in teaching and student interest in learning; (3) that inter-institutional faculty development would not only benefit individual faculty members professionally but encourage sharing and networking among the institutions; and (4) that colleges lacked the resources to carry out extensive reform individually and would welcome support for such an undertaking.

The Westchester Education Coalition was well positioned to play a key role by providing leadership and creating a favorable context for collaboration not only among the colleges but with the local schools. In a third party role, the Coalition could provide neutral territory for discussion of issues outside individual institutional concerns, demands and restraints which often pose obstacles to reform. Moreover, because of its strong ties to business and the community, the Coalition offered the possibility of building new relationships and resources which may not have been heretofore available to the colleges.

Eight Westchester institutions were invited to participate in the WTEG project, College of New Rochelle, Concordia, Iona, Manhattanville, Marymount, Mercy, Pace and Sarah Lawrence. After the project started, a ninth school, Fordham University, with a new branch campus in Westchester, asked to join the group.

The project was divided into two phases. Phase I focused on diversity and technology from 1991 to 1993; phase II on work-based learning and science/mathematiacs from 1993 to 1995. Task forces were established for each of the four areas. Education faculty from the nine colleges and classroom teachers from a number of local schools were asked to participate in one of the task forces which required a commitment of two years. The role of classroom teachers was to contribute to the discussions and to provide feedback on issues related to classroom reality and teachers' professional development. Participating classroom teachers were also exposed to the same training, skills, and knowledge base as their college counterparts.

The task forces generally met on a monthly basis during the academic year. Several task forces also held seminars or intensive training during the summer. Participants read and discussed materials of both general and specific interest to the topic. For example, in the first year, the technology training sessions and support were provided by the staff at Iona College's Institute for Computer Studies. Curriculum integration sessions and discussions were lead by Dr. Cornelia Brunner from the Center on Children and Technology at the Bank Street

College. Dr. Margaret Honey, also from Bank Street, conducted the overall evaluation and provided important feedback on various aspects of the project. Enrichment workshops were made available through Prodigy and WNET/Texaco's Teacher Training Institute. During the seond year, additional training, project development, demonstrations and discussions provided key focal points for group metings. Generally, the first year was devoted to training, support, group discussions about integration, and informal course revisions through small technology projects. The second year focused on field testing, refinement, and expansion of the revisions. In exchange for the time spent in and preparing for monthly workshops, college faculty were given one course release time or a teaching overage stipend, generally in the first semester of the project. School districts were reimbursed for substitute teacher costs. All participants were given stipends for any summer semimars attended. IBM provided PS 2 Model 55/386 computers and advanced academic software for all participants through a compiementary grant. Modems and trial e-mail connections were also provided to the entire task force by Prodigy.

Upon completion of the two years, participants were asked to present and share their course revisions with their colleagues at the college or school, and where appropriate, to lead departmental discussions on them. The reports compiled in this publication reflect their efforts.

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Two

CONCERNS-BASED PROJECT MANAGEMENT AND SUPPORT

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Systemic change is a process, not a one-time event. For a single school or organization it requires: understanding the interconnectedness of all aspects of the school and realizing that changing one thing affects many other things; establishing a context where all players create a shared vision; translating, communicating, and developing that vision into action by building bridges within the organization; understanding the dynamics of the organization and its underlying culture; recognizing that the responsibility for change resides with everyone involved with the organization.

Professional development is also a process and not an event. For individual educators it requires: acknowledging and working with an understanding of the individual's level of expertise; utilizing a personal growth model and adopting a "working with" framework, as opposed to deficit model of learning; recognizing that teaching and learning, curriculum and teaching are inextricably linked; revelling in the notion that professional growth is never quite complete and is linked to personal growth and self-confidence. Like systemic change, it requires understanding the interconnectedness of all aspects of a professional's life. The complexities that ensue when one project combines systemic change with professional development and curriculum integration with eighteen different institutions certainly makes the entire enterprise more challenging, sometimes even daunting.

In the previous chapter, Shirley Mow, the Executive Director of the Westchester Education Coalition and WTEG's Project Director, described its evolution and rationale. In many respects, the project epitomizes what the Coalition does and how it strives to develop systemic change in areas such as preservice and inservice teacher education on a county-wide basis. The Coalition's basic mission is to always develop such initiatives in partnership with others, thus helping create shared visions of educational change.

Teacher education faculty from nine Westchester colleges/universities and classroom teachers from eight school districts participated in WTEG'S "Task Force on Technology" (Appendix A). The project's main goal was to enable teacher educators to integrate new

skills, knowledge, and understandings into required courses. This was accomplished by providing teacher education faculty and their classroom teacher-partners with various incentives and opportunities over a two-year period. Additionally, WTEG aimed at providing neu' ıl turf for issues that were common to all nine schools or departments of education, as well as issues that connect teacher educators to school practitioners. By structuring the project as a collaborative enterprise, it enabled the Coalition to develop the types of cross-institutional interactions which could simulate various forms of a professional development school. In the main, teacher education was regarded in the WTEG project as a principal, missing link in school reform.

One of the major challenges that I faced as the "glue that held the project together," was how to best provide support for and communications among the individuals, the institutions, and the consultants in each of the four strands of the project. The organizational structure of the project (Appendix B) provided some of the general administrative support and communications, including an Advisory Council comprised of deans, department chairs, superintendents, and principals. A subcommittee of the education chairs provided the fundamental institutional cohesion and two-way communications between the participants, the Coalition, project facilitators, and evaluators. This key group met each month with the project directors with no compensation or release time for their immeasurable services.

Facilitators and other consultants were built into the project, providing the content support and evaluation component. In the case of the "Technology Task Force," as the second group came to be known, the Institute for Computer Studies at Iona College furnished the crucial monthly computer training and reinforcement sessions, training evaluation, and telephone support hotline for participants. Tony Halaris and Joanne L. Steele from Iona provided the training leadership and customized curriculum (Appendix C). These were basically six-hour training modules combining skills, information, and applications in variety of areas including DOS, file management, word-processing, spreadsheets, and multi-media. To balance the work on skills acquisition, sessions which focused on curriculum integration issues, classroom applications, and pedagogical concerns were provided. The latter were led by Dr. Cornelia Brunner. Dr. Margaret Honey constructed the evaluation process, both of which they will discuss in greater detail in Chapter Three.

Enrichment workshops on telecommunications and bulletin boards were supplied by both Prodigy and WNET/Texaco's Teacher Training Institute. Through a complementary grant, IBM Corporation provided each participant with a PS 2 Model 55/386 computer complete with advanced academic software. The latter included Windows, Word, Excel, and Toolbook. Coordinating and facilitating communications among consultants, evaluators, and participants became my second administrative challenge.

The third and most important challenge about WTEG support had to do with working with individuals and groups of people in the process of change. I consulted the well-known "Concerns-Based Adoption Model" (Hall et al, 1986), having previously used it in a study of a significantly smaller group doing curriculum planning in preservice teacher education (Freeouf, 1988). Briefly, CBAM postulates that innovation diffusion as applied to individuals

connects their individuals Stages of Concerns (SoC) with their Levels of Use (LoU) of the same. In combination, these provide a powerful description of two dynamics of an individual involved in change -- one dimension focussing on feelings, the other on performance. The model has been field-tested numerous times since its inception in the early '70's and is particularly interesting as it applies to curriculum development and groups of individuals working together.

A summary of CBAM's two main components is found in the tables below:

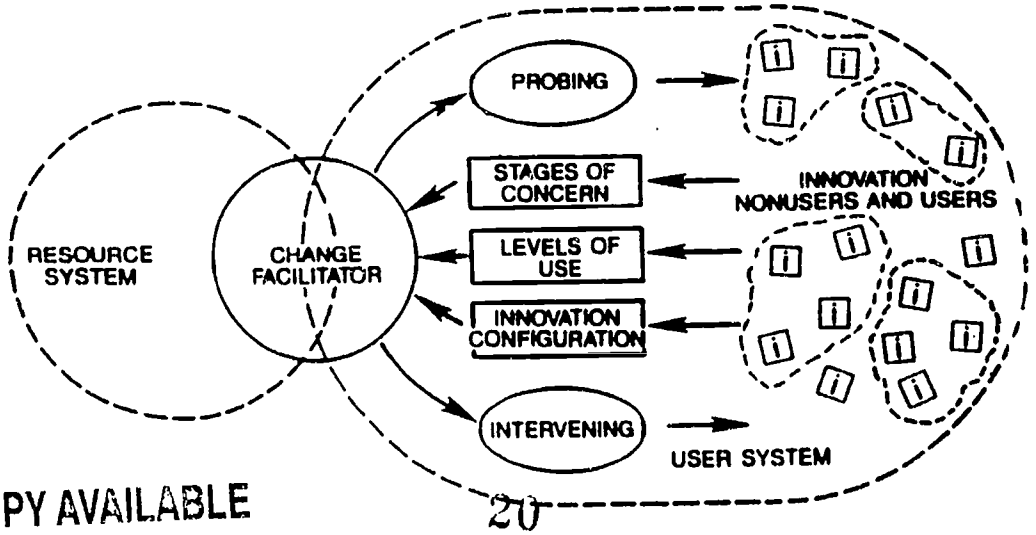
0. AWARENESS: I am not concerned about it (the innovation)
1. INFORMATIONAL: I would like to know more about it.
2. PERSONAL: How will using it affect me?
3. MANAGEMENT: I seem to be spending all my time getting material ready.
4. CONSEQUENCE: How is my use affecting kids?
5. COLLABORATION: I am concerned about relating what I am doing with what others are doing.
6. REFOCUSING: I have some ideas about something that would work even better.

0. NON-USE: little or no knowledge, involvement, doing nothing to become involved
1. ORIENTATION: takes action to learn more detailed information about the innovation
2. PREPARATION: makes a decision to use it by establishing a time to begin
3. MECHANICAL USE: begins first use
4. ROUTINE: a routine pattern of use is established
5. REFINEMENT: changes use based on formal or informal evaluation in order to increase student outcomes
6. INTEGRATION: initiates changes in use based on input from and in coordination with colleagues for benefit of students
7. RENEWAL: begins exploring alternative to or major modifications of it in use

At first, CBAM seemed like a good-fit for use with the entire WTEG project because all four strands involved new skills, new knowledge, or new ways of working. While I was able to apply the model with varying degrees of success and precision with my work with each of the four task forces, it turned out to be the most useful with the technology group. On a general level it provided me with a framework for understanding the obstacles that all participants faced in being challenged to "integrate" new skills and understandings in their courses. But with the technology task force I found I could most readily translate "complaints" or "resistance" into "stages of concern," and that I was then better equipped to support and to represent individual needs at strategic decision-making points. However, it should also be noted that throughout the project CBAM was used more as a reference-point or reality-check and not in the scientific manner intended by its developers.

One of the major differences between this task force on technology and the others was our heavy reliance on training and integration testing. While the product requirement was the same in all cases (a revised, improved course in the required teacher preparation program), the emphasis on the revised syllabus was dramatically reduced with this task force. This was, in part, due to the facilitators' advice that the current research shows that "real integration" takes five to seven years. Paralleling that information was my informal use of CBAM which likewise contends that integration and collaboration represent relatively high levels stages for individuals in the throws of new knowledge/skills acquistion and utilization. Thus, we began to collect multi-faceted data about the participants, their concerns, their skills, and their visions about how technology could be used in their classrooms. The result with this particular task force was that: (1) less emphasis was placed on the revised course and more on the opportunity to explore difference ways to integrate technology; (2) we kept a closer pulse and a reality-check on where each individual participant was in the process; and (3) I continualy strived to give each person the most appropriate support in order to move him/her to the next level of use. Using the CBAM terminology, this meant providing resources, coaching, follow-up, reinforcement, encouragement, external confirmation, additional data, opportunities for sharing, et cetera at strategic points. A general view of the CBAM model is given below:

The Concerns-Based Adoption Model



Because of the scope of the project and the large skills spread among participants, it was impossible in one semester to cover all the major areas of technology and meet all individual needs. The project's planners decided to focus in the introductory sessions on Toolbook as a means of (1) learning Windows and mousing skills; (2) introducing authoring tools; (3) learning about such concepts as "buttons" and multimedia in general, and (4) as motivational device. While this strategy had mixed results, it was instrumental in capturing the imagination of the group as a whole and resulted in some useful products by a small number of diligent task force members. The emphasis on Toolbook eventually was replaced by more basic training in the use of word processing (for approximately half the group) and facility with spreadsheets, database use, and telecommunications for the entire group. The scope of the training being provided had evolved and far-exceeded planners initial expectations regarding this portion of the project. Luckily, adequate resources from multiple sources permitted us to keep meeting participants' needs throughout.

More than half-way through the two-year cycle, an analysis of interviews with participants revealed that for all of them "successful technology integration" meant that their students will have the opportunity to either work with or learn about a range of different technology-based applications. The college faculty were also interested in modeling processes that their preservice students would eventually use when teaching in schools. Success also meant increasing their own level of comfort and expertise with various kinds of technologies. Exit presentations on their technology projects revealed other aspects of the revised courses that are not necessarily evident in the revised syllabi. Five of the college faculty presented projects that used or created tools to support gathering, sorting, and analyzing project-based curriculum or materials by their preservice students, using such applications as Excel or Paradox, or creating their own applications using Toolbook or Linkway Live.

All participants reported integrating technology into professional tasks. Both college faculty and classroom teachers now regularly use their computers for practical tasks and personal productivity including writing lessons plans, scheduling, managing their time, creating tests and progress reports. Word processing was being used for all professional writing and presentation materials. In the CBAM language, most participants had attained at least a Level IV (routine) use of technology. At least three faculty and classroom teachers went beyond this use level, creating databases for use in their schools and working with colleagues on joint projects. In these cases and others, participants had gone into "refinement" (Level V) and in 3 cases "integration." A year later, informal data indicate that "renewal" seems to be imminent in at least two of the three cases. To my mind, this suggests that the time for "real integration" can be shortened to under 5 years with adequate support -- including training, equipment, and concerns-based management on several different levels.

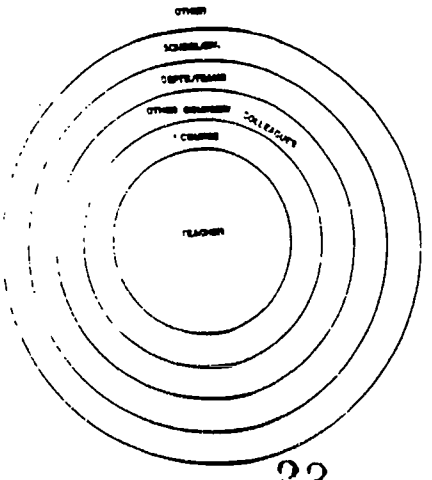
Towards the end of the second year (1992-93) and throughout the third year of the WTEG project (1993-94), independent evaluation is confirming that this project is spreading far beyond the revision of a single course. College faculty have begun to integrate

technology in most if not all the courses they teach. Collaborations around technology issues among faculty at the same institution are becoming more common -- even extending beyond schools and departments of education. At least three departments have begun formal discussions about reconceptualizing their teacher preparation courses with technology as a vital part of that discussion. Even some inter-collegiate connections are beginning to take root, although to a much lesser degree. Collaborations between college faculty and classroom teachers continue to be problematic for the traditional reasons cited in the literature. Again, as the CBAM model would predict, participants may not have been ready for true collaborations until they themselves were comfortable with their restructured courses and had safely tested their creative ideas for preparing new teachers using and modeling technology. Some of the teacher-faculty contacts and the friendships that have emerged as a result of this task force offer potential hope for fruitful collaborations in the future.

For all the technology participants, attitudes about and advocacy for technology in education remains very high. This is supported by the fact that many of these participants have now positioned themselves on important technology-related committees and task forces within their own institutions. As one participant confided in me, "I finally realized that Education will not get its fair share of computers unless I am on that Finance Committee." Most of the other participants have begun lobbying for and working with other individuals at their schools to get support for technology. A local advocacy/support group, WALT (Westchester Alliance for Learning Technologies), which promotes technology in education, was created last year paralleling the WTEG technology effort, and all the members of the technology task force have since become members of WALT.

I continue to meet with and communicate with three of the classroom teachers who were among the more advanced in their technology use. We started a special interest group at almost the very beginning of the project to share information about the use of technology in math and science teaching. This SIG has resulted in several spinoff projects and collaborations among different configurations of the four of us and will undoubtedly spill over to the work of the WTEG Math/Science task force in Phase II. A chapter by one of those classroom teachers is included in this volume.

This project is about change in teacher education. The best way to depict it is as a set of concentric circles with the teacher educator at the center of the process:



One of the outcomes of this project is a set of 11 formally revised courses from 9 different Westchester colleges/universities. Each time one of the 11 courses is taught, an average of 20 preservice teachers is being affected, meaning that the work of this task force is reaching between 260 and 520 new teachers each year. The ripple effect of this task force is bound to impact both schools and teacher education in our county and beyond. Tracing and documenting that impact was beyond the scope of this project, but is being done by individual WTEG colleges on a smaller scale.

CBAM researchers claim that, "Understanding and describing the process of change in educational institutions, while at the same time maintaining sight of the individual, is a challenging task for managers of the change process, as well as for change researchers." The participating educators in the WTEG project taught me the importance of that statement in multiple ways throughout the project. Their "products," the syllabi that follow in Part II, represent mere snapshots of courses that are always evolving and, like their developers and the teachers that they teach, are always in the process of becoming.

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Three

HIGHLIGHTS FROM THE EVALUATION OF THE W.T.E.G. TECHNOLOGY TASK FORCE

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GOALS

The evaluation of the WTEG's Technology Task force was designed to be multifaceted. The evaluation not only investigates the ways in which participants began to make use of computer-based technologies in their classes over time, it explores participants' evolving understanding of the ways in which technology can be used for instructional purposes, and examines changes in their attitudes and feelings toward technology as a whole. Data was collected from a variety of sources: in-depth interviews, self-reports by participants on their technology integration efforts, pre- and post-course syllabi, e-mail exchanges between participants and the task force Associate Project Director (APD), and a pre- and post-projective task designed to elicit participants' less-than-conscious feelings about technology in general. The evaluation of training sessions was done independently by the workshop trainers from Iona's Institute for Computer Studies and the results shared with us on a regular basis. Taken as a whole, our data analysis addresses the following questions:

- What were the conceptual and practical steps that college faculty and classroom teachers needed to take in order to move in the direction of integrating technology into their curricula?

- What were the issues and obstacles that participants struggle with as they work on integrating technology into their curricula?

- Which of the training seminars and workshops were most valuable and why?

- What were the characteristics of the technology-based curriculum designs that teachers came up with and how did these evolve and develop over time?

- Did participants' attitudes and feelings toward computer-based technologies change over time?

CONCEPTUAL AND PRACTICAL STEPS

As a whole, the participants in the Technology Task Force represented a highly motivated group of individuals who were genuinely interested in improving their understanding and knowledge of computer-based technologies. The interview and project presentation data confirm that participants were interested in acquiring both hands-on, practical knowledge of computer applications, and in developing a more conceptually based understanding of the issues that arise when attempting to integrate technology into college level and K-12 classrooms.

Both the college faculty and the K-12 teachers were interested in exposing their students to the multiple ways in which information-based technologies can be used as conceptual and functional aids in a range of educational settings. The participants also realized that in order to begin to use technology effectively, they would have to substantially increase their own understanding of computer applications and proceed slowly broadening their use of technology resources as they deciphered what would and would not work in their classrooms settings.

A subgroup of ten participants, showed a surprising degree of commitment toward learning about Toolbook, and working on designing their own applications. Not only did they learn a repertoire of basic technical skills, but they also began to grapple with many of the more complicated design issues. They had to think about the context in which their applications would be used, how students would interact with the program, and how the overall design of the program would impact upon its pedagogical goals and objectives. In addition, participants learned to think about a number of issues having to do with presentation aesthetics -- where to place buttons, what colors to use, the size and appearance of text, the use of graphics, and so on.

The participants demonstrated a high-degree of commitment to wrestling with problems that are difficult and often discourage less enthusiastic and dedicated learners. While in some cases, the participants abandoned the complex process of making their own applications in favor of using a commercial product, in the course of working with Toolbook they developed a well-articulated understanding of what they wanted to accomplish and the kinds of application they would need to meet their goals.

ISSUES AND OBSTACLES

Over time nearly all of the participants moved in the direction of using information-based and video technologies with students in their courses. In the course of doing so, a number of issues were brought to the surface that participants had to contend with.

One of the most common problems encountered by the faculty in schools of education had to do with the availability of resources. Computers are often located in laboratory settings, rather than in instructors' classrooms, and special arrangements need to be made to schedule the use of the machines. Unfortunately, this more often than not, perpetuates an image of technology as "something extra," rather than an integral and fluid part of curricular activities.

In other cases the availability of software was a problem. For faculty who had created or were working on creating their own applications, sharing the software with colleagues teaching the same course proved to be difficult. In at least one institution there was no central list of software that the college had purchased; as a result programs were difficult to track down. And in other cases, the hardware at the college was not capable of running some of applications that were used as part of the Technology Task Force.

In addition, at least one of the college faculty encountered the most common issues that arise when universities attempt to work in K-12 settings on technology integration projects. Technical difficulties, problems of scheduling, and issues surrounding the compatibility of the university researcher's goal and objectives and those of the classroom teacher all surfaced.

The K-12 participants encountered other obstacles, of which the most prevalent had to do with time. Because the professional lives of classroom teachers are much more constricted than those of university professors, finding the time to learn applications and introduce them to other colleagues is often exceedingly difficult. In addition, technology-based classroom projects are often cumbersome and labor intensive and require unusual degrees of commitment on the part of both teachers and students.

Finally, both faculty and K-12 participants were uncertain about the role of the classroom teachers in the task force. Some of the initial confusion might have been clarified if a clear and deliberate agenda for collaboration among the two groups had been established. Developing such an agenda, however, would have required substantial input from the participants themselves, and might not have been feasible within the limited time frame of the project. Over the two years of the task force, several interesting collaborations did develop spontaneously between faculty and classroom teachers.

EFFECTIVENESS OF TRAINING

Over the course of the training sessions, the faculty came to see the importance of being able to experience and model the kinds of practices that they want education students to take with them into the K-12 arena. the participants reported benefiting most clearly from the training sessions that focused on the hands-on use of applications in a curriculum-relevant context. Although they also learned from the training sessions that were about specific applications (Windows, Excel, etc.), they preferred the sessions that focused on learning to use applications in the context of a curriculum relevant activities.

The other activity that participants felt was extremely worthwhile involved discussing and sharing information about their projects with other faculty. The analysis of the telecommunications data suggests that the use of the network became another effective way in which a subset of participants were able to acquire information about applications they were attempting to use. Telecommunicating allowed participants to offer each other advice and support synchronously, which served as an effective complement to other, real-time important venues for advice and support, such as hotlines and Saturday support sessions, which reinforced participants' internal support networks.

TECHNOLOGY-BASED CURRICULUM DESIGNS

The focus of the technology integration workshops was on helping the participants to develop technology integration plans in which technology would be used transparently - as a flexible and robust tool rather than as an object of study in and of itself. These workshops emphasized the ways in which real integration means that the technology is not the object or focus of the activity, but is used as a tool to facilitate the activity. Early on in the integration sessions, participants were given the following guidelines around which to build their technology integration plans:

- The plan should reflect the kinds of skills that students need to acquire.
- The plan should make effective and adequate use of available technology resources.
- The plan should pay attention to design issues that come into play when technology is used in the classroom.
- The plan should take into consideration classroom management issues.
- The plan should focus on collaborative learning.
- The plan should pay attention to issues of equity and access that are often highlighted when technology is used in classrooms.

- Where appropriate, the plan should pay attention to presentation aesthetics.
- The plan should make provisions for assessment issues.

The analysis of the course syllabi and the analysis of project presentations strongly suggest that the majority of participants are making substantial efforts to integrate technology into their classes. Most of the participants are moving in the direction of developing technology integration efforts that are realistic in scope and that make use of computer-based applications to facilitate and enhance work they want their students to undertake. And, their use of technology does indeed focus directly on the kinds of skills that students need to acquire. More often than not, these are higher-order, inquiry-based, analytical skills and the technology is used to support and encourage reflection and analysis. The participants are also doing a more than adequate job of making use of the technology-based resources they have at their disposal. A number of them have taken the necessary steps to find out what kinds of technology-based resources are available on their campuses, and have begun to incorporate these into their classes. And, the ten participants who began to work on Toolbook projects, with the help of the workshop instructor, were able to think through a number of issues having to do with the design and presentation of their applications.

The more complex issues that have to do with thinking through how technology will be deployed in different classroom settings, classroom management, collaborative learning, and issues of equity and access were only present in the sophisticated technology designs as evidenced in the three "excellent" classroom syllabi. This is not surprising given the fact that at the start of the task force many of the participants had a substantial amount to learn about basic computer applications. Participants needed to acquire a certain amount of technical sophistication that would enable them to think about how to use technology effectively in their classrooms, and the majority were not yet able to address these more subtle issues. This finding is, however, consistent with research which suggests that it typically takes between five and seven years for teachers to become comfortable and competent users of educational technologies. With continued support (technical, and pedagogical, and personal) and continued, adequate opportunities for in-service professional development, these teachers are likely to continue to move in the direction they are currently headed, becoming increasingly creative and knowledgeable users of educational technologies.

ATTITUDES AND FEELINGS ABOUT COMPUTER-BASED TECHNOLOGIES

Several distinct differences between the pre- and post-task narratives suggest that the pre- and post-task groups had some overall shifts in their feelings about what computers were, what they could do, and how they, as users, could interact with and manipulate computers and the resources they provide access to.

The shift away from simple realistic descriptions of computers and toward futuristic machines suggests that the post-task group was able to draw upon a wider range of imaginative associations as they invented the "computer of the future." Post-task subjects described their characters investigating these computers more enthusiastically, overall, and the timidity some described in the pre-task was no longer present. Post-task subjects also focused more on the content presented by the computer, and no longer focused on the appearance of the machine itself, which was a common preoccupation for the pre-task group. While they did not necessarily portray themselves as able to control, or even totally comprehend, their fantasy machines, their inventions were less intimidating to them, and less threatening. Consistent with this was the fact that instructions, which the pre-task group often relied on, are no longer included in the post-tasks groups' narratives - 60% of the post-tasks group did not include any obstacles at all, and simply described their character as immediately and seamlessly beginning to make use of the computer. Once they are using the computer, the post-task subjects had their characters creating their own materials, or, alternatively, experiencing some kind of simulation created by the computer, more frequently than the pre-task group did. The post-task group far less on generalized descriptions of "looking around," or "playing around" on the computer. Instead, 80% of them described their characters as taking part in some specific activity that is facilitated or made possible by this "computer of the future."

Taken together, these shifts suggest a general increase in the willingness of the participants to think about technology as an accessible, productive tool which they are able to put to use, as well as an increase in their ability to think imaginatively about what computers are capable of doing.

RECOMMENDATIONS

The issues and obstacles that surfaced for both the college faculty and K-12 teachers are ones that typically arise when educators begin to integrate technology into their curricula. Although these participants found creative ways to overcome or circumvent specific obstacles, the majority of these problems cannot be solved by individual faculty alone. Schools of education and K-12 institutions need to develop systematic plans for supporting their faculty in integrating technology into the curricula. This means that their must be a greater investment in technology resources, as well as in training and ongoing support.

Taken as a whole the data from this evaluation strongly support the fact that the participants have become comfortable with a range of technology-based applications and are making use of them in their courses. An interesting follow-up would be to look at the efforts of the participants two years from now, to learn about how they are progressing toward becoming knowledgeable and fluent technology-users, using technologies flexibly and substantively in their classroom.

The following recommendations are based on the range of findings described in this report:

- The intermingling of graduate-level faculty and K-12 teachers is an innovative and promising approach to professional development for educators. Each group brings their perspective to life for the other, embodying and making real issues which often become oversimplified when considered in the abstract. However, this piece of the program would have benefited from an explicit statement of expectation of how these different members of the group were expected to collaborate and/or inform one another's work. Scaffolding and articulating how this might come about, and following through with these ideas through formal activities, or simply by moderation and encouragement, could greatly increase everyone's benefit form the strengths and expertise of each other's backrounds.

- Making Toolbook a prominent part of the curriculum of this program allowed participants to engage in substantive and engaging development projects which introduced them to important design issues which are central to gaining a meaningful understanding of the issues involved in technology integration. However, the technical challenges presented by the software may have been disproportionate to the rewards one might gain by mastering the software and authoring one's own environment. Refocussing the emphasis on Toolbook (or on another piece of authoring software) so that the central issues are about design rather than programming may invite participants into a discussion of the really important issues more smoothly and with less of a sense of intimidation.

- The rich conversation among members of the "special interest group" which evolved on-line during this program points to a promising area for further integration of telecommunications into the participants' learning process. It would be possible to develop and moderate a range of special interest groups that speak to a range of needs and interests, in order to draw a range of program participants into these kinds of on-line collaborations. Developing these kinds of conversations would be likely to offer additional motivation for program participants to become active telecommunicators, which would lead to both a range of rich special interest groups and, in all probability, new and serendipitous connections among participants who might not have otherwise make contact. Developing such groups requires thoughtful and deliberate cultivation by a moderator, along the lines of the effort the APD put into this program's special interest group.

In summary, all the data collected in this evaluation suggests that program participants acquired a substantial amount of new knowledge and gained new perspectives on themselves as potential designers and creators of technological applications appropriate to their needs and teaching styles. The projective tests illustrate particularly vividly the course of many participants experience - moving away from an understanding of technology as a complex and mysterious object beyonds one's control of comprehension, and toward a new of technology as a promising and multifaceted arena for the construction, explorations and analysis of knowledge. The participants' new view of technology, and of themselves as technology-knowledgeable teachers, is appropriately moderated by their realistic sense of the limitations of both themselves as not-yet expert users, and of the technology as less-than-magical. This combination of optimism and realism bodes well for the participants' futures - with continued support, training, and exposure to the expertise and new ideas of others, they are likely to continue on their path to being accomplished and confident technology-using professionals.

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Cornelia Brunner, Ph.D. Columbia University, has been involved in the research, production, and teaching of educational technology in a variety of subject areas for twenty-five years. In addition to conducting research projects about the relationship between learning and technology, she has designed and implemented educational materials incorporating technologies to support inquiry-based learning and teaching in science, socials studies, and the arts. She has worked extensively with staff and students in a variety of school environments on curriculum development projects, teacher support and training, and extra-curricular student clubs. She has taught experimental courses at Bank Street's College, in which teachers are introduced to new technologies, learn how to integrate technology in their curriculum, and learn how to use HyperCard to design their own educational programs. Dr. Brunner has also been an industry consultant for the design of educational entertainment projects for children of all ages during the last twenty years.

Part II.

REVISED SYLLABI

Each of the faculty participating in the WTEG project revised a course in their college's required preservice program. The syllabi that follow show a wide range of both the kinds of courses impacted and the ways in which technology can be integrated to better prepare teachers for the classrooms of today and tomorrow. Because these publication versions are merely snapshots of a dynamic curricular process and have been condensed due to space limitatons, readers are urged to contact the individual faculty person for additional and more current information about the course and the vital role that technology now plays in it.

Foundations Courses

Four

FOUNDATIONS OF EDUCATION THEORY

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INTRODUCTION

HISTORY/BACKGROUND OF THE COURSE. This course takes students through important historical and philosophical developments in the growth of education as a discipline. It is designed to help preservice students appreciate the social, historical, philosophical and cultural factors that have combined to create the various understandings of teaching and learning as we know them in this country.

The students taking the course tend to be Education majors and those considering seriously the idea of becoming a teacher. Iona permits students to major in Education if they wish to teach in the elementary school. A student wishing to teach on the secondary level must complete a major in a discipline other than Education. All candidates for teaching certificates in New York State must complete satisfactorily the New York State Teaching Certification Examination. This course is designed to help students meet the requirements of the section of the examination in Professional Knowledge.

This focus on professional knowledge as a significant portion of the course explains partly why the course will not change much over time. It is designed specifically to bridge a knowledge gap in the groups of students who normally pursue a teaching career. The content has always been the main focus and getting students to retain the data has always been the major challenge for the instructors. This course is one of the places in the curriculum that is regularly evaluated by the performance of students on the external measure of a state examination and so is subject to regular pressure from the forces that would be concerned to have our students perform well under such scrutiny.

A second issue concerns the philosophical thought that forms a major portion of the curriculum in this course. Most students report the sections on philosophical foundations to be the most difficult to understand and the least practical portion of the course as currently presented. The labeling system in use in the common textbooks does not vary from labels that would have been used in the 19th century: Idealism, Realism, Scholasticism, etc. The

students report these distinctions to be confusing. It may be advanced that the instructor and the methods used can contribute significantly to the quality of the experience in the instruction in philosophies of education.

A critical issue for students hoping to become teachers must necessarily be their understanding of themselves. This understanding is of course a life project but needs early attention and diligence from those who would teach young people. This process is called different things in different places but usually can be located under the rubric of "personal philosophy of education," or "my understanding of myself," or "who am I?" At Iona, these questions flow naturally from the tradition of Iona College -- founded by persons who carried by means of their faith a sense of the sacred and the need to seek not only knowledge but wisdom (scientia et sapientia). These questions need to be explored throughout a liberal arts education and receive attention from a variety of disciplines; they are included in this foundation course and explored tentatively around that part of the course dealing with a personal philosophy of education.

This course also hopes to show students the relationship between the law and American education. Students are shown that the Federal Constitution , for example, does not mention education directly but the federal government has intervened in various ways in the educational affairs of the individual states to greater or lesser degree depending on the climate of the times and the pressing social issues. Most recently the law has become involved in significant ways as the various states press to remedy inequities in the distribution of resources; these inequities being based in part at least on a reading of the 14th Amendment's "equal protection" clause as it has been interpreted in various state constitutions.

The historical elements of the course span nearly 2,000 years of recorded history-- the Greeks and Romans understanding of education is the starting point but the contribution of monasteries and guilds and then the democratic public systems of this country are examined and placed in historical context. The course emphasizes how changes have developed in education with a view to having these future teachers and parents begin to understand how rapidly the changes are accelerating for them and for their children and students in the near future. Perhaps the most significant changes for them will involve computing technology.

HOW TO TEACH WITH THIS TECHNOLOGY. There are clear indications that peer support for achievement can be an important contributor to learning. Techniques that resolve the dilemma of humanistic educational goals and the achievement of basic knowledge of content usually involve some form of group work. There is growing acknowledgment of the wisdom that student success in school can be related strongly to the idea of interactive relationships organized around academic work, this is especially true of college students. The idea of future teachers working together on their learning has therefore an intrinsic appeal that makes even greater sense when combined with technology in the form of computers. This intersection of ideas led to the most significant innovation in the course: on-line reports via e-mail.

Students are encouraged to learn the names and proper spelling for each of their classmates. This knowledge is required of them in order to make clear that knowing each other was a value and that the value was going to be enforced by a testing requirement. Each of several quizzes includes items that asked for the names of classmates. The instructor models the value of knowing names by learning all the names in the first week and using this information to connect individually during class time with all the students. The rationale for the stress on names was based on a conviction that the students would treat each other with greater respect when they knew at least this much information about the other student. Later, they also learn the computing account number for each student in their working group.

It is important to note here that the instructor for this course did not major in computer science or study computer science in any systematic form. The instructor completed the Ph.D. in Literacy Education after majoring in English as an undergraduate in a liberal arts institution. More will be said later about the ways that a non-technical person might become competent to teach via technologies. One of the significant advantages for such a person has to do with translating the technical jargon of the industry into comprehensible English for students in the classrooms at Iona College.

Iona College Academic Computing Facilities include 300 microcomputers and terminals available for student use on all three campuses. Most PCs can also function as full-screen terminals when connected to the IBM 4381 on the New Rochelle campus. Ten public computing laboratories make it possible for students to access this resource with relative ease. Computing accounts are available for all students, faculty, administrators and staff at the college, providing access to the mainframe computer systems and to a variety of microcomputer software and services through "Connectpac" which enables the PCs to connect with the mainframe.

The next portion of the description connects the ideas of cooperative learning and using technology to share information. This pilot project came to life in the spring 1993 version of the Education 202 in two sections of the course. The use of technology is applied to a requirement in the course that calls for students to make a report of a site visit to a school to collect information on a program or project in existence at the school. The rationale for the site visit includes the concern that these students need to be engaged on a regular basis with schools in operation so as to ground their classroom instruction in real experience. The students have already been placed in schools for a three week observation experience prior to the spring semester and so are usually familiar with the school they selected for the site visit.

The site visit guidelines are included in the list of supporting materials. In general the site visit is arranged to assist the student in making connections from the classroom to the "real world" of schools in operation; to this is added the dimension of sharing the report with classmates by means of the technology of computing.

Students are advised that they will be learning how to use the electronic mail system of the college in order to assist them in communicating with the instructor and with each

other. The supporting materials for the electronic mail instruction are distributed and discussed. These materials consist mainly of procedures to follow when signing on to the system and sending mail. The instruction in the use of the system takes several class meetings and bears some comment.

Every Iona student is required to complete 3 credits in computing as part of the core curriculum. This requirement means that each of the students in the Foundations course has some familiarity with the Iona system and is comfortable in a PC environment. The electronic mail system however, runs on the mainframe system and needs to be accessed from a lab or by a modem and software arrangement. Most students find this to be a significant adjustment even when they had been familiar with the system from other courses. The guidelines for signing on to electronic mail (e-mail) has to be revised several times as the configurations became better understood by the instructor.

Several classes are given over to instruction on signing on and signing off the mainframe, adding a signature, moving around from reading mail to sending mail, sending mail to a group, copying mail, reviewing outgoing messages and other aspects. A very significant adjustment surrounds the mainframe text editor.

All students are taught the basics of WordPerfect as part of their core course in computing. However, the editor in the mail system is not WordPerfect, but an older version of a word processor that differs in several significant ways from WP. It is not a "friendly" package because it is not sold commercially and therefore is not concerned about being purchased by computer "pedestrians". Students find the lack of a word-wrap feature especially irritating. Initial efforts at composing on the screen meet with much frustration. The level of indignation is usually related to the ability to hear and follow directions. Many students improve their performance by asking the student at the next terminal for help when needed. This feature of the technology has been noted elsewhere but it bears mention here in the context of collaborative learning; students are comfortable asking for and receiving help from their peers on computers.

Most students find the use of the e-mail system adds considerably to the amount of time they need to spend on campus in order to master the system. They are reluctant to adjust their tight schedules of class, commuting and work responsibilities in order to add the competence of mastering e-mail. Additional motivation is provided by the instructor placing on the e-mail system samples of the mid term and final examination questions along with the answers. Students are advised that the examination material is available in this form only and no hard copies were to be provided. Most students take the extra time to sign on and read the exam questions and take the test. The answer key is provided later on the system in order to encourage additional use of the system.

After the basics of e-mail are mastered, the students are directed to send e-mail to the instructor as a basis for a quiz grade. Practice in signing on and signing off the system proves to be a useful part of the instruction. The details of getting in and out of the mainframe system could be confusing when not practiced thoroughly so as to become a

routine that eventually becomes embedded as part of the ritual of coming to class. Students eventually signe on and sign off automatically with no additional instruction. The next level of expertise proves harder to master: competence with additional features.

Students need to learn about moving around the e-mail system with its options and its restrictions and its specialized vocabulary which can strike the casual user as arcane and confusing. Lessons are designed to teach them separate sections of the system with exercises built in to give practice in the techniques. As a student masters Send Mail, for example, s/he would next be asked to Forward Mail and then to Add Nicknames to their Mail Directory and finally, to add a Group to their Mail Directory to receive their reports and research. At this point they are assigned to a Working Group and advised to include the E-Mail Address for each member in the Group under their Mail Directory. Supporting materials with these details are also distributed in hard copy in class.

Students pair off for the site visit research. Pairing accomplishes several things. Students are connected and both are responsible for the success of the visit. Students are joined with someone they can work with to accomplish a goal and this kind of team work usually results in increased appreciation for the other person. Teachers too often can become isolated, especially in larger schools, and this partnering in preservice education can help students to understand the importance of working together. The instruction makes a point of this aspect of the design. Partners reporting on site visits also divides in half the number of possible reports that need to be evaluated by the instructor.

E-mail allows teams to write and revise on the screen. The reports are submitted electronically to the instructor. Each report is answered electronically by the instructor with additional questions for the team being the usual form of response. Each pair of reporters is also responsible for sending their report to each member of the Working Group. In this way each of the site visits has a potential audience of 5, (instructor, partner, 3 students in the Working Group) thus increasing the dispersal of information and adding to the consideration of kinds of audience for the writers of the report. No hard copies are exchanged. Students are free to print whatever e-mail they wish to duplicate in this way.

A teacher working in this technology will need to be flexible about the amount of time needed to bring the class to independence on the system. The most efficient instruction usually involves having students convene in the computing laboratory. Securing a public lab involves knowing the procedures for such reservation of space and sometimes can involve several phone calls and some negotiation with the various constituencies having jurisdiction in the lab that the instructor finds most convenient. The instructor will do well to maintain cordial relations with the various parties involved in securing the reservations. The lab may be occupied by students doing other work and these need to be advised ahead of time that a class is about to arrive so they might be able to save their work and exit the lab prior to the arrival of the instructor's class.

Lab assistants can be very helpful during class sessions when the number of questions suddenly overwhelms the instructor. Lab assistants are most helpful when they have been

briefed ahead of time as to the nature of the class and the type of instruction to be provided.

Several persistent issues should be mentioned here to help teachers understand what to expect in a lab setting. Very often the students will not be familiar with the keyboard. Even when they have a computer at home or have taken courses on the campus they have not been routinely at work on the system. Students will also find the change of venue upsetting for a while. They are not used to listening to instruction while having such an attractive distraction as a full color monitor directly in front of them. A teacher who is uncomfortable with competition of this kind will need to adjust quickly to the change.

Some students will be very familiar with the computer. These students will often begin to work on the system as soon as they enter the room. They will frequently not hear directions correctly as a result. It is best to have all the monitors turned off when students enter so as to have a reasonable chance of keeping their attention for the instruction. It may be helpful to have the more competent students sit near a less competent student to assist him or her when necessary. In some labs the number of students will exceed the number of work stations available and so students may need to double up on a machine from time to time.

Once students are in place and the machines are turned on the instructor may need to have written directions distributed with the steps in the sign on process arranged so as to minimize the chances for serious problems. The sign-on instructions need to be carefully worked out and pilot-tested with a student or two before the class gets to use them. Often the directions that appear specific and clear and logical to the instructor will contain ambiguities and gaps in process that will only be apparent when they are followed carefully by a naive user who is not able to guess what the instructor really meant to say at a particular point.

As soon as the students are released to work on their own the instructor needs to be moving around the room watching the screens to see who needs to be helped first. Many times the student will be stuck at a screen and trying to read the entire message while the next student will have gone several screens ahead with no hesitation. The sign-on and mail facility are similar in that several layers of procedures must be gotten through. At one point, in order to get from the network to the mail facility screen (most labs at Iona start at the network screen), it was necessary to pass through 8 different screens with at least one keystroke operation per screen before a student was able to arrive at the mail facility on the mainframe. This crossing over process from LAN to mainframe becomes routine for students only with practice. Very few students used the mail facility prior to coming to the class; they had all received instruction and practice in the basic computing course but apparently had not made the mail facility a regular part of their schooling processes. Many express surprise at the various features of the system and seem intrigued by the possibilities inherent in this method of communication.

The instructor needs to be prepared to juggle questions from students at varying levels of complexity and usually simultaneously. Once released from having to listen to the instructor for each step, they are free to move at their own pace and so the questions and problems will occur in more or less random order and from various parts of the room. It is

often useful to remind them to check with the nearest student first if they have a question. This permits the teacher to spend more time with the truly needy; usually this student has been absent from the previous lab meeting. Often a problem will arise on several screens at the same time and this is usually a sign that the instructions were misinterpreted or badly written. At this point a general direction from the instructor can clarify the issue for everyone simultaneously.

The students can be encouraged to use the mail facility by several means. Placing examination review questions on the mail system has been mentioned earlier. Students are also assigned to a Working Group usually of 4 or 5 persons for several exercises in class discussion. These groups are responsible for knowing the names of members and eventually they are combined in a mail group by the instructor after inspecting the quiz performances of all and arranging weaker students to be grouped with stronger students. The mail group is assigned a Team Color for inclusion in the Mail Directory for each member. Later, when the time comes for the dispersal of information on site visits and similar ventures, the Working Group receives mail from each member for inspection and review. Ultimately the idea is that each Working Group would be in dialogue around issues generated by the work of the individuals in the group. This particular practice it is hoped will lead to reflection by these students on the value of collegial problem-solving for education by the educationists. Even in cases where the student is not planning to be a teacher it is hoped he or she will come to see the value of working together to solve problems.

IMPLICATIONS FOR FUTURE TEACHERS. Electronic mail technology has several advantages in the group setting. First, it is always a typewritten text that is being processed and so the ease of editing can lead to more complex and comprehensive products. Second, the message can be sent and received at any time of day. Students on complicated school/job/commute schedules can be in touch with each other via e-mail in ways not possible with conventional telephone messaging. Third, the instructor can be in communication even when the student is not in class. Messages can be sent and received from various parts of the campus. This instructor can communicate from home by means of a modem and software that allows connection to the mainframe for the cost of a local phone call. Fourth, the duplication of paper and the exchange of papers can be significantly reduced at a savings to several constituencies.

The e-mail project will be continued for several reasons. The students at Iona have first-rate facilities to take advantage of. The students going into teaching will be faced with computers in more and more school systems; superintendents will want to employ teachers who are comfortable in such an environment. Students in schools now will, by all accounts, need to be more technologically literate than any previous generation — they will need teachers who can use the computer with a level of comfort that will make the computer as ubiquitous as chalk and blackboards.

Finally, as the semester progresses, more and more mail is processed and answered by the instructor. This increase shows across a wide spectrum of students. Several students reported discovering the Bitnet system which allows them to write to friends at other

universities. Students shows increasing confidence in moving in and out of the system in various labs. Many are at first unaware that the same mail facility was accessible from any lab on campus. They became more comfortable about connecting between classes to check their mail. They need less and less intervention during lab meetings. They begin exploring aspects of the system on their own that were unfamiliar to the instructor but showed promise of being useful and/or interesting once the initial intimidation had worn off. Students seem to grow in confidence to the extent that they realize that they can make mistakes and still make progress.

Related Bibliography

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COURSE SYLLABUS

Course Overview:

This course will provide students with knowledge of the more important historical and philosophical contributions to education and will enable students to see their relationship to current educational practices. It will also examine significant issues in school law, specifically as they relate to the legal responsibilities of teachers and schools.

Course Objectives:

Through class activities, tests and course requirements students will demonstrate their ability to:

1. Identify current trends in the teaching profession.
2. Trace the development of education in the West from ancient times until the present.
3. Analyze the lasting significance of the educational reforms discussed in class.
4. Identify and explain five schools of philosophical thought and their influence upon education.
5. Analyze six educational philosophies and be able to present a rationale for each.
6. Develop and defend a personal philosophy of education.
7. Describe the structure of the current school system and its operation in society.
8. Describe and discuss the multi-ethnic and multi-cultural composition of current schools and explain the ramifications this holds for the classroom teacher.
9. List and explain at least sever social problems facing schools and teachers.
10. Identify significant cases in school law and analyze their importance in terms of the protection of student or teacher rights.
11. Define teacher rights and teacher responsibilities within the current educational system.
12. Trace the development of societal and school responses to the student with special educational needs.
13. Compare and contrast the American school system with the schooling provided by other countries. Particular emphasis will be placed on non-western systems.

Course Methodology:

This course will be taught through lecture, class discussion, the use of A-V material, individual research and writing , cooperative learning activities, computing technologies and site visits with observation reports.

TEXT required:

Johnson, James A., et al. Introduction to the Foundations of American Education. 9th ed. Boston: Allyn and Bacon, 1994.

ASSIGNMENTS AND REQUIREMENTS:

A. Attendance at class will be essential to the understanding of course material. See College Catalogue for attendance regulations(page 30 of current catalog.)

B. Class Participation: Students are expected to question, to comment and to contribute to the development of the course.

C. Related readings will be assigned prior to class meetings.

D. There will be frequent quizzes and each will be announced.

E. Mid Term Exam: Thursday, March 11, regular class time. This will form 20% of final grade.

F. Final Exam: to be announced. This will form 20% of final grade.

G. Two Projects will be submitted during the course of the semester.

PROJECT GUIDELINES:

1. The first project (5-7 typewritten pages) will be an exercise in research on a person who was historically significant to the field of education. The paper should address the following points:

a. A brief account (one paragraph) of the origins of the individual and a longer description of the cultural context in which the person lived, e.g., the political, religious, and social climate of the period.

b. Highlight the person's major contributions to education and say why these ideas made a difference.

c. Identify the lasting impact of this person's theories in light of subsequent history.

This paper must include a bibliography and follow MLA format. Suggested topics will be discussed in class. The paper will be due on or before THURSDAY , MARCH 4, 1993. It will represent 20% of the final grade.

2. The second project will require the use of computing TECHNOLOGY and collaborating with a PARTNER on collecting information and designing a report to be entered in a database on the MUSIC system of the Iona College Academic Computing Facilities. The second project will concern itself with an educational topic that is of special interest to you personally and can be observed by you at a local school site. You and your partner must arrange with the principal or superintendent of the school you wish to visit and observe. You will need to arrange appointments and interview protocols with teachers and administrators who will need to be consulted. Site visit guidelines and suggested research areas will be explained in class presentations.

You will need to become familiar with the MUSIC system of the college com, ting facilities with special attention to the E-Mail facility. Your project will be entered on the E-Mail facility and sent electronically to directory accessible to education students who will have read-only access to your report. The department hopes to develop your expertise with computing technology while simultaneously giving you the opportunity for collaborating with colleagues and contributing to our knowledge base of programs in the local schools that you have observed first hand.

There are three deadlines for the Project: March 11 - last day to submit approval for site visits and topics; April 30 - all site visits completed; May 6 - all reports received via E-Mail

Here is a listing of suggested topics for investigation by you and your partner:

Bilingual Educational Programs, Vocational Education Programs, Alternative Schools, Special Education, Physical Education, At-Risk Programs, AIDS Education, Drug Education, Magnet Schools, School-Based Clinics, School responses to Latch-Key children, High Stakes Testing, Ability Grouping, Character Education, Portfolio Assessment, Head Start Programs, Family Involvement in Schools, Technology Projects, Career Education, Arts Education, Conflict Resolution, Disabled Learners, Performance-Based Assessment, Multicultural Curriculum, Teacher Assessment.

Procedures:

a. Secure approval of your topic with the instructor
b. Secure approval of site visit for you and your partner from the appropriate school authorities
c. Research the problem. Newspapers, magazines, periodicals and educational journals can provide information.
d. Complete the site visits and interviews.
e. Analyze the philosophy of education present in the program (or with the educators).
f. Evaluate the worthiness of the program and describe your reactions to it.
g. Enter your report on the MUSIC system

This course is a part of your professional preparation as a teacher. Being able to meet responsibilities on time is one of the marks of a professional person. Late material will carry a penalty. Penalties for intellectual dishonesty include failure for the assignment.

SUMMARY FOR GRADING:

Attendance, participation, reading assignments and quizzes	20%
Mid Term Examination	20%
Final Examination	20%
March 4th Paper	20%
May 6th Technology Project	20%

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Five

FOUNDATIONS OF EDUCATION

Carol R. Keyes
Pace University, White Plains, New York

INTRODUCTION

I began planning work on integrating technology into a Fall, 1992 course. One of the first steps was participating in the technology task force and learning more about computers. Another beginning aspect was considering how to integrate technology in a way that made sense in a course that seemed less inviting than some others. During this time I talked with other colleagues and eventually decided to work with Brother Kevin Cawley from Iona College, who was teaching a similar course. We decided to work on developing questionnaires to find out what our students knew about computers, and what the schools in the area were doing with computers. We were both teaching beginning courses about teaching, and schools.

During Summer, 1992, we began to develop questionnaires, first using IBM programs, File Assistant and File Report. We chose those programs because they are loaded on the network in our computer lab and easy for students to access. They turned out to be very limited. We then investigated data base programs and discovered that Paradox was user friendly and we could get some help in developing the questionnaires. We would also be able to use them at both sites and then combine our results. That would provide additional information about beginning students knowledge of computers, and what was happening in the schools. If we continue to collect the data over a few years the results should be interesting in a report.

We worked on the questionnaires. In the autumn my undergraduates entered the data on both surveys. At the time Paradox was not on the network so they had to enter it individually in another computer room, with the support of a graduate assistant who was knowledgeable about computers.

These students also had two opportunities to work in the computer lab. Here is where I discovered how much they didn't know and the glitches that happen even after you've

checked every computer in the room. The first experience was rather chaotic. Some students did not even know what format meant or how to turn on a computer. That was my error. I had assumed that they had all taken our introductory computer course, mandatory in the general core of the university then developed, with our graduate student, written instructions that someone who had never used a computer could follow. Their second visit was better. During that time they also tried some other programs. It is important to allow more time than you think you need but to also have back up activities for those who are finished, don't want to experience too much, and cannot help anyone else. It is like setting up an action oriented early childhood classroom.

During Intersession '93, Brother Kevin and I worked together to combine our data and see what kinds of results emerged.

I did not teach the undergraduate course during Spring '93,, but taught a similar graduate course. By this time we had Paradox on the network and both questionnaires were in Paradox. The students entered the data from both questionnaires. Again there were some who had never used a computer before. We did have other programs for them to explore.

During the spring I also tried having my students in my child development course do cooperative reports on adulthood using Linkway Live. It was interesting and they did produce some variations of regular reports. However again I underestimated the amount of time needed because the students were new to the program as well as the content. They enjoyed creating graphs, pictures and such but also felt much more time was needed.

Since I took over as Chairperson of the Department this spring, I have had less time than usual to go any further except in my thinking, which may be the most important at this time.

I will not be teaching either course next fall, but will work with those who will be teaching them to continue to integrate the technology. I would like to get it to the . . level, where the students review the compiled data, draw inferences, and report it in interesting ways, using hypertext. It is partly a matter of time, and partly a matter of how much computer knowledge of the programs the students have.

In terms of technology and our department we are working to integrate it in all our courses moving from simpler to more sophisticated ways to use it. This summer as we review all our courses we are planning for the whole program. In addition we have a commitment for a faculty person, Dr. Flank , to be a technology consultant, and she has been awarded three credits release time to do that for us. In fact, as I prepared to write this, I talked with her about what I see as an important need. We do have a computer course that all education students take. I suggested that we redesign it, and mandate it early in the program. In its redesign I'd like to see it have word processing, an integrated package that has a data base as well, and some hypertext as Linkway Live so that when they come to the education courses, they will be more familiar with the tools and can apply them better to the design of reports, curriculum, etc.

I did not teach the Foundations courses this semester but will be in the spring and have revised what I will plan to infuse technology into the course.

I have concluded that using the computer for e-mail is a valuable experience for preservice teachers. While it is important to know what computers are in schools and what will be expected of teachers, the collection and entering of the data on the computer was more mechanical than substantive. While students could examine what other students collected and perhaps manipulate the data, it was not terribly meaningful for them.

Using the computer as a tool for communication via e-mail has a richer value. Students will experience using the computer in a rather non-threatening manner; most already know how to type. The value of networking, exchanging ideas, collaborating with others has countless benefits while they are in our program and after.

What the students will be doing this spring is interviewing a teacher and/or principal via e-mail, questioning them on issues that they want to know related to their career change.

To gain access to teachers and principals I wrote a note on the multiple listings of early childhood and middle school and asked for persons who would be willing to communicate once or maybe more to my graduate students. To date I have received twenty five responses from all over this country, Canada and Hawaii.

We will be giving each student an e-mail address, and if they do not have access from home we will provide access in our computer laboratory or in one of our offices where we will have a modem for their use.

COURSE SYLLABUS

Catalog Course Description:

Examines the professional, historical, and social contexts of teaching. Theory and research in teaching and learning are applied to current problems in education.

General Course Description and Objectives:

The purpose of this course is to introduce students to central issues and concerns in education. The topics range from philosophical, historical, sociological, ethical, political and economic issues related to schools and schooling to the dynamics of school life, the diverse and changing nature of the students and the experiences of teachers. Students will be introduced to research on good schools that have productive learning environments, and effective instructional activities; issues of assessment; the special needs of students and the ways in which schools respond to those needs.

As the first course in a professional education program, it has been designed to help pre-service students seriously examine whether education is an appropriate profession for them to pursue. As the course progresses students are asked to broaden their perspective by focusing on the following five components:

- self;
- students;
- teacher;
- schools;
- community.

Through text, supplementary readings, journals and case studies, students will consider the following questions: What does it mean to teach? What are schools for? What do teachers need to know?

Required Texts:

Ryan, K. and J.M. Cooper (1992) Those Who Can, Teach. Sixth Edition. Boston: Houghton Mifflin Company.

Silverman, Rita, W. Welty, S. Lyon (1992) CASE STUDIES for Teacher Problem Solving. New York: McGraw Hill.

Collection of Readings Spring 1994 prepared by Carol R. Keyes.

NYS Syllabus: Child Abuse: 1990 (Distributed by the Department- $5.00 cost of duplication.)

The State Education Department: A New Compact for Learning. July 1991. (Distributed by the Department)

Students are expected to:

1. identify personal and professional strengths and weaknesses that have an impact on teaching and learning.
2. acquire a knowledge base about the professional environment and its various systems, and constituents.
3. begin to understand the complex roles of the teacher.
4. become familiar with ways of thinking about educational issues.
5. compare and contrast theory with practice in the process of analyzing case studies of practicing teachers, and by writing professional journals.
6. apply course content to the problems of teachers in the process of analyzing case studies of practicing teachers.
7. synthesize the content through the development of an initial philosophy of education.
8. know the law regarding the reporting of child abuse: participate in NYS mandated seminar.

9. have the opportunity to collaborate effectively with colleagues through cooperative group experiences.

Preparation for class sessions:

Bring your texts and pertinent readings to each class session. Be prepared to discuss the central issues in the assigned readings and cases. Be ready to share one or two items from that chapter that seem important to you, any items that surprised you, and what topics in the chapter you could apply to your own experience.

The class will emphasize discussion heavily and rely little on lectures by the instructor. Expect to share a variety of perspectives and opinions. Be willing to take some chances intellectually.

Because this course emphasizes informed discussion (which is impossible to "call in"), any student who misses more than one class meetings , regardless of the reason, will have to meet with me to discuss dropping the course.

TENTATIVE CLASS SCHEDULE, TOPICS, READINGS AND ASSIGNMENTS

DATE	TOPICS , READINGS, ASSIGNMENTS
2/2	Topic: Introduction Assignment: None
2/9	Topics: Theoretical Underpinnings Preparation for cases. Readings due: R&C, Chapter 1 K: Section I Silverman: To the students Assignment due: syllabus response
2/16	Topic: Technology and Education Readings due: R&C,pp.282,301-304,544-546 Activity: Preparation for E-Mail, Case practice
2/23	Topic: Philosophical Issues Readings due: R&C,Chapter 3 &4 K: Section II,Chapter 3 & 4 Assignment due: Case analysis Activity: Case: Brenda Forester

TENTATIVE CLASS SCHEDULE, TOPICS, READINGS AND ASSIGNMENTS

DATE **TOPICS , READINGS, ASSIGNMENTS**

Questions for discussion
1. What is Brenda's problem? Why is she reacting so negatively to Professor Garrison's approach?
2. What does Professor Garrison's approach assume about the way people learn? What is her philosophy?
3. What is the relationship between Brenda's earlier school experience and her teaching philosophy and style?
4. What responsibility does the school/university have to help Brenda?

3/2 Topic: Ethical Decision making
Readings due: R&C, Chapters 5 & 6
K: Section 2, Chapters 5 & 6
Assignment due: Case Analysis,
Decision on the 10% of your grade
Activity: Case-David Burton
Questions for discussion
1. Which ethical principles are at stake for each key player?
2. What factors influence David's decision?
3. How should David make his ethical decision?
4. What responsibility does the principal have in resolving the issues?

3/9 Topic: School Governance, Politics, and Reform
Readings due: R&C, Chapter 6
K: Section 2, Chapter 6
Assignment due: Philosophy Draft ,Case Outline
Activity: Guest Lecturer, Case: Amanda Jackson
Questions for discussion
1. What is going on here? What are Amanda Jackson's problems?
2. What should she do? What are the implications of the actions you suggest?

3/16 No class - spring break

3/23 Topic: Life in the Schools
Readings due: R&C, Chapters 7 & 8
K: Section 3 Chapters 7 & 8
Assignment due: Oral history
Questions to consider for class:
1. What social changes do you anticipate in the next decade?
2. How might schools prepare children to make the change successfully?

TENTATIVE CLASS SCHEDULE, TOPICS, READINGS AND ASSIGNMENTS

DATE **TOPICS , READINGS, ASSIGNMENTS**

3/30 Topic: Life in the Schools
Readings due: R&C Chapter 9, Epilogue
New Compact of Learning
Assignment due: Professional journal part 1 or part 2
Issue to consider for class:
Your vision of schools of the future and how your journal entries, your experience, and your philosophy influence your vision.

4/6 Topic: Students, Social Issues and Child Abuse Prevention**
Readings due: R&C , Chapters 5,10,11
K: Section IV
NYS Child Abuse Prevention Manual
Assignment due: Case Analysis
Activity: Mandated Prevention of Child Abuse Seminar
Case: Ellen Norton
Questions for discussion
1. What are Ellen's problems?
2. How did Ellen get herself into this predicament?
3. What should Ellen do about Abby? about Becky?
4. What role can the administration play in reportingchild abuse? and in supportingEllen?

4/13 Topic: Students and Their Social Context, Working with Families
Readings due: R&C , Chapters 10,11
K: Section IV
Assignment due: Turn in the unsigned paper on your family constellation.
Professional Journal Part 2.
Activity: Working with families
Learning about our own learning styles.(Meyers-Briggs)
Question to consider for discussion:
What are the issues that concern you about working with families? What data from your professional journal inform this topic?

4/20 Topic: School Wide Implementation Issues
Readings due: R&C,Chapters 6,8 & 10
Assignment: Case Analysis Due
Activity: Case: Allison Cohen
Questions for discussion
1. Why are the Bidwell School teachers giving Allison so much trouble?
2. What are the problems here?
3. What can Allison do?
4. What outside sources of support can Allison use? What can the principal do

TENTATIVE CLASS SCHEDULE, TOPICS, READINGS AND ASSIGNMENTS

DATE	TOPICS , READINGS, ASSIGNMENTS
	4. (continued) to help?
4/27	Topic: Teaching Issues Readings due: R&C,Chapters 12 & 13 K: Section V, Chapters 12 & 13 Assignment: Case Analysis Due Activity: Case: Michael Watson Questions for discussion 1. What are the problems from Michael's perspective? 2. What do you see are the real problems here? 3. What should Michael do for the rest of the year? 4. In order to be more effective what should Michael do to prepare for next year and the remainder of his teaching career? 5. What responsibilities do the administrators have in the supervision of new teachers?
5/4	Topic: Teaching Issues Readings due: R&C, Chapters 12 & 13 K: Section V, Chapters 12 & 13 Assignments due: Case Analysis Due Professional Journal Part 3. Activity: Case: Marie Dupont Questions for discussion 1. What key issues would you advise Debby Barton to cover in her paper for Dr. Goldman? 2. Do you think Marie is a good teacher? Why/why not? 3. What weaknesses can you identify in Marie's teaching? What theories might Marie review to improve these areas?
5/11	Topic: Professionalism Readings due: R&C, Chapters 2,14 Case: Patricia Barnes Assignment due: Case outline Final philosophy paper Activity: Discussion of professionalism, job search Case: Patricia Barnes Questions for discussion 1. What do you think is Patricia Barnes problems? Why? 2. What can she do to cope more successfully with the stresses of student teaching?
5/18	Final examination discussion

SPECIFIC REQUIREMENTS:

Syllabus Response

Please read the syllabus and review your texts. When you have done so, please write a paragraph or two describing your expectations for the class, given what you know about yourself as a learner. Please make me aware of any special needs that you have. Next describe any concerns which you had as you read the syllabus as well as any assignment or area of study to which you look forward. Finally list three questions about the class which you would like to have answered. Due February 9

Your Philosophy of Education

Reflect on your background, priorities, experience and firmly held beliefs. As a result of your readings and these reflections , prepare a short paper about your philosophy of education. In this paper state what your philosophy is, what its roots are and what its implications are for you when you become a teacher. Your philosophy should parallel on of the more established philosophies of education. You may borrow different elements from different philosophies (take an eclectic stance) but make sure that your assertions are grounded in the established philosophies as described in the texts. It's all right to be original and creative as long as you do not allow your position to become watered down or contradictory. Be honest and acknowledge where there are inconsistencies in what you value or areas that you have not yet worked out.

Some of the questions you should consider as you write the first draft are:

1.What do you believe about how we learn and develop?
2.What kinds of human beings do you want to help your students become?
3.What important ideas, and values about human beings and their relationship to the world do you want to foster in your teaching?
4.How do you see the relationship between you as a teacher and your students?
5.What are the roots of your philosophy? What are its implications for education?

This paper should be as short as possible (e.g. most school applications ask that you describe your philosophy in one page or less). While one page is ideal, you can take up to three pages to present your ideas.

Suggestion: Do this paper on a word processor and save your disc.
First Draft Due: March 9

Final Philosophy of Education

Your final paper will highlight your professional beliefs about humanity and learning. When preparing the final edition of your paper consider the following questions:

1. What established philosophy best fits your personal philosophy? What is the most telling argument against this philosophy?
2. What experiences, models and knowledge can you use to support your choice?
3. Why did you not choose the other philosophical approaches?
4. What do you believe are the implications of this philosophy for your own teaching?
5. How will your philosophy impact your job search?

The paper should be as short as possible (e.g. most school applications ask that you describe your philosophy in one page or less). While one page is ideal, you can take up to three pages to present your ideas.
Final Version Due: May 11

Note: You might find it useful to save your philosophy, and add to it as you take other courses in your pre-service program.

Oral History

Interview the oldest person you know (try to have the person be over sixty) to find out that person's memories of school. You might ask " What did the school look like? What kind of neighborhood was it in? What subjects did you study? What was a typical day like? What were some of the rules in your school? What were your teachers like?

Add your own analysis of the similarities and differences between their experiences and yours. In class we will consider it in relation to schools of the present and what we need for the future.

This assignment is considered part of participation. Please type it for submission to me. Due: March 23

Professional Journal -- Making Connections

A journal provides the opportunity to reflect on and react to course content and experiences as they relate to your personal and professional experiences (past, present, future). This professional journal will consist of three parts , one part will be based upon shadowing a teacher in school, one part will be based upon e-mail conversation with a teacher/principal, and one part will be your reaction to content issues in the course

Your journal (that is each part) should be no more than four pages. There is some flexibility about when these sections are due. The first two parts are due on March 30 and

April 13. Some of you may choose to turn in part one on March 30 and part two on April 13. Others may turn in part two on March 30 and part one on April 13. All of you will turn in part three on May 4.

PART ONE- EXCHANGING IDEAS WITH A PROFESSIONAL VIA E-MAIL

This assignment has two purposes. It will provide you with first hand experience with an authority in the field (a practicing teacher) and it will give you the opportunity to have an experience with using technology as a tool .

PREPARATION

As soon as possible, bring a 3 1/2 diskette to school so that you can get a copy of KERMIT and an e-mail address. I have planned for us to make contact with professionals by 2/16 , the date we will be talking about technology and education. If you do not have a modem and computer at home I will arrange access and a time for you in the computer laboratory , Aloysia 103 or in one of our offices in the faculty center for further conversations with the professional.

In preparation for conducting this interview or conversation by e-mail think about your goals for this activity. What do you want to discover? What questions have you about your professional future that he/she might be able to clarify through your interview/communication ? What questions from the course can you gain greater clarity about?

Plan your interview/communication carefully. The following are only illustrative:

What brought you into education?
How did you prepare for the profession?
What did you expect teaching would be like?
Was it different from what you expected?
Were you prepared for your first year teaching?
What were the biggest challenges you faced as a novice teacher?
What are your satisfactions in the work?
What are some of the frustrations?
How have you or your teaching style changed since your first year of teaching?
If you had to do it all over again, would you?
What would you do instead?
What advice might you have for someone preparing to be a teacher?

Afterwards try to reconstruct the major ideas and insight you gained from the experience. Select the highlights and write up the experience,the major messages you received, and any connections to the content to date (rather than a summary of all the teacher's thoughts) in a paper of no more than three pages.

Due: March 30 or April 13

You may decide that you want to continue to correspond about other issues in the course. Certainly share additional insights with us as well.

PART TWO -- SHADOWING A TEACHER

It is essential that you spend some time in schools long before your student teaching experience. This assignment entails spending one day in a school following a teacher throughout the day to find out first hand what a teacher experiences over a day.

(Let me know if you need help finding a school for this one day visit, or a letter to take to a school. Complete the form at the end of the course outline by February 16)

Choose a teacher in a grade level that you want to teach or a teacher who is teaching your special discipline area. Arrive at a school when the teacher is to arrive. Stay with that teacher for the entire day. Keep a record of how the teacher spends his/her day by noting the activity and time spent on each activity. Notice time spent filling out forms: attendance, paper work from the main office, reading,correcting student work, teaching whole class, teaching small group, teaching individual students, lunch, faculty meetings, team planning, duties (hall, lavatory, lunch) meeting a student, free time (coffee break, talking to colleagues) planning lessons, preparing materials, library research, talking to other teachers, child study team meeting, calling/conferencing with parents, supervising extracurricular activities/coaching.

Highlight your experience and reactions in no more than three pages, again, making connections to the course content.
Due: March 30 or April 13

PART THREE -- REFLECTING AND REACTING TO ISSUES IN THE TEXT AND READINGS

The final section of your professional journal-making connections, may be developed in one of three ways.

1. As the semester progresses respond to specific issues in the text and readings. Share how they may influence your future teaching career, concerns they raise, questions to be considered. Compare and contrast the new content with your initial ideas as you began the course.

2. Pick a particular area foundations, school organization, life in the schools, curriculum, students, teachers, and focus on that area more deeply, again considering the issues, questions, comparing and contrasting the new content with your initial ideas as you began the course.

3. Begin to organize the content of the course around the criteria in the State Regulations or the Assessment of Teaching Skills Test Framework. For example , what are you learning and thinking about related to creating a productive learning environment? What do you understand about the reciprocal rights and responsibilities in situations involving interactions between teachers and students, parents, community members, colleagues, school administrators, and other school personnel?

Once again connect your ideas, and the content in no more than four pages.
Due: May 4

Case Analysis Requirement

The primary purpose of the case analysis activity is to provide you with a structured format for analyzing and discussing the cases of real schools situations. There are five key elements in case analyses:

1) identification of the problems from more than one perspective;
2) development of some ideas, suggestions, solutions that might improve the classroom, resolve some of the problems, change an attitude, help some students, help the teacher;
3) evaluation of your ideas;
4) integration of educational theory/research/principles into the analysis;
5) quality of the presentation.

Each analysis must be typed and should be no more than three pages, double spaced. A complete case analysis should contain, at minimum, the following elements, as well as other information you believe to be pertinent:

1. A clear statement of the problems in the case.
   a. Identify the problems as the teacher and other protagonists see them.
   b. State how you view the problems. The key here is to be able to separate the "presenting problem(s)" from the "real problem(s)".
   c. Use the reading to support your perspective of the problems.
2. Some possible solutions to the problems.
   a.Be specific and create short term and long term "action plans", i.e. the short term represents what the teacher or protagonist might try the next day/s and the long term what the teacher or protagonist should do over time.
   b. Within your plans identify a criterion for success.
   c. Cite the advantages and disadvantages of your suggested action plans.
   d. Relate your solutions directly to the readings assigned .
3. Written presentation
   a. Be sure to use headings for your sections as indicated in the case analysis check list.
   b.Citing references: Although we use APA as our standard for research papers,

etc. you may cite references in the cases analysis as (R & C, p. 54) For the articles in the collection you'll need to use the author and page within the article. (Dewey,p.7) If it is reference to the case (S&W, p. 10)

POST DISCUSSION PAPERS.

Time will be left at the end of some of the case discussions for you to write a response to the discussion. You will be asked to:

1. Reflect on the problems & solutions discussed in class. What would you do now under the circumstances described? What do you know understand that you didn't before?
2. Why would choose those solutions and not others?
3. Support your responses with direct references to the text or outside readings.

The post discussion paper will be considered when assigning case grades.

NOTE:
While you will be responsible for the questions, and discussion for all the cases, and various sections as you learn the case method of problem solving, only three cases will be graded.

There may be occasions where only a part of the class will complete a written case analysis. There may also be occasions when only a portion of the full analysis will be written for submission.

On days when you are only responsible for discussion you will be expected to bring a one page outline with text references, quotes, and paraphrases to enable you to participate actively in discussion, using the text content appropriately.

FINAL EXAM

The final exam will be a take-home case analysis due the day the final exam for this class is scheduled. The final exam will be distributed three weeks before the due date. For this case analysis do the following:

1. Identify the problems in the case from the teacher's or other protagonist's point of view.
2. Identify the problems from your point of view. Include in this section the theoretical and/or research support for your view.
3. Given the situation described in the case choose no more than two problems that you think are the most important to resolve and design an action plan, based on the theories, issues, principles described in our readings.

The final case analysis must be typed, and not exceed five pages, double-spaced.

Final Exam - Due 5/18

Grades

Your work will be assessed for accuracy, thoroughness, originality, higher order thinking.

Participation	20%
Cases	20%
Journals	15%
Philosophy	15%
Final	20%

You may decide where the other 10% of your grade will be placed. This must be put in writing for me by March 2nd.

DEPARTMENT OF TEACHER EDUCATION POLICIES

GENERAL REQUIREMENTS

Attendance, preparation, participation and a positive attitude in class are a reflection of professional commitment. We expect students to be on time and attend regularly; to bring their text book to class when it is requested; to thoughtfully contribute to class discussions by actively listening and exchanging ideas about assigned topics; and to complete assignments by the due dates, according to the criteria described.

ATTENDANCE

We expect students to attend and participate in all classes; we encourage one hundred percent attendance. In terms of policy a student may be absent for the number of course credit hours without affecting the grade. For example of a course is a three credit course a student might miss three hours of the class. After that the grade is lowered a partial grade for every absence. Coming late and leaving early are considered partial absences.

PARTICIPATION

Because people learn more when they are active and informed participants the education courses require participation. Students are expected to attend each class prepared to be knowledgeable participants in class discussions. Participation is defined as taking an ACTIVE part in discussions, listening, carefully and thoughtfully, and exchanging ideas about the assigned topics. Students should expect to be graded on the quality as well as the quantity of their participation.

ASSIGNMENTS

Assignments are due on the specific dates and are to be submitted on those dates. Late assignments for which prior arrangements have been made may be dropped a partial grade for each day they are late. Late assignments for which prior arrangements have NOT been made will not be accepted.

If a student is going to be absent, he/she can mail the assignment to the professor's home/office address on the assigned date as evidenced by the post mark.

WRITTEN WORK

We expect that students preparing to be teachers will submit work of the same high quality they will expect from their students. The quality of students' work will be judged on both content and presentation. Written work should be thoughtful in content, reflecting revision, reflection and edited for spelling and grammar before it is submitted. Written work must be typed double spaced with appropriate margins on both sides.

(Word processors are available for student use in the computer labs in both White Plains and Pleasantville. Help in writing and grammar is available at the writing labs at each campus.)

GRADES

Students' grades will be influenced by:

a. their thoughtful completion of all assignments and tests
b. their on-time attendance.
c. their informed and active participation.
d. their appropriate responses in small group activities.

Graduate requirements to keep in mind.

Students applying for student teaching must have completed all prerequisites in education and have: a minimum CQPa OF 3.

Family constellation Due 4/13

This is just to be answered with numbers . DO NOT SIGN THIS.

Complete this as it was in your family when you were in first grade

number of parents at home _____
stepparents at home _____
siblings
number of older_____
number of younger_____
other adults_____
parents' job(s)
father_____
mother_____

Complete this as it was in your family when you were in sixth grade

number of parents at home _____
stepparents at home _____
siblings
number of older_____
number of younger_____
other adults_____
parents' job(s)
father_____
mother_____

Complete this as it was in your family when you were in high school

number of parents at home _____
stepparents at home _____
siblings
number of older_____
number of younger_____
other adults_____
parents' job(s)
father_____
mother_____

Complete this as it is presently (if you are a parent complete it as if your child were writing it)

number of parents at home _____
stepparents at home _____
siblings
number of older_____
number of younger_____
other adults_____
parents' job(s)
father_____
mother_____

Carol R. Keyes, Ph.D. Union Institute, is presently a Professor in and the Chairperson of the Department of Teacher Education, Pace University, Westchester Campuses. It is a department that focuses on helping teachers become decision makers, problem solvers, classroom researchers and life long learners through case-based pedagogy, a focus on critical thinking, diversity and technology. Dr. Keyes teaches graduate and undergraduate courses in foundations, development and educational psychology. As a participant in the Technology Task Force of the Westchester Teacher Education Group, she has become committed personally and professionally to the value of computers and other technological advances as tools to improve education and the quality of life. Her research interests lie in areas where theory or empirical data can help teachers improve their own practice. In earlier years, from a base of campus children's programs, she sought ways to help teachers improve their practice by investigating a non-judgmental system that enabled teachers to monitor their responses to children's behavior in classrooms. More recently during her sabbatical, she combined three areas of interest, child development, teacher as researcher and technology to investigate the power of the video camera in teacher research, using children's developing social skills as the area for inquiry. This work resulted in presentations and videos that focus on how to help teachers to recognize and develop their role as classroom researchers. Dr. Keyes is an early childhood specialist known nationally and internationally for that work as well as her efforts to demonstrate the value of programs for families and children on college and university campuses. Dr. Keyes is a former president of the National Coalition for Campus Child Care Inc. She conceptualized, co-edited and wrote for a recent issue of the Early Childhood Research Quarterly devoted to issues about campus children's programs. Dr. Keyes also co-authored three texts in that field, Early Childhood Administration, Helping Children Grow: The Adult's Role, and Your Children, Your Choices.

Methods Courses

Six

METHODS OF TEACHING MATHEMATICS IN ELEMENTARY SCHOOL

Sandra Flank
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INTRODUCTION

This course is based on five major premises: 1) Students must understand the subject matter thoroughly, 2) Students must be able to solve problems in mathematics, 3) Mathematics must be taught as connected to the world beyond the classroom, 4) There must be substantial verbalization of the process, and 5) All students can understand mathematics. Technology is infused in this course where it enhances these five areas.

Understanding of subject matter

Because knowledge is not passively received, but is actively built by the learner, ideas and thoughts cannot be communicated in the sense that meaning is packaged into words and given to another who unpacks the meaning from the sentences. That is, much as we might like to, we cannot put ideas in students' heads. They will and must construct their own meanings. Our attempts at communication do not result in conveying meaning, but rather, our expression evokes past knowledge in other people which results in different meanings for each person. Knowledge originates in the learner's activity performed on objects. By this, we don't mean things that are lying around ready made in the world, but the experiences which exist in the learner's mind as mental constructs. Thus, when a person thinks about a tree, he is "running through" all his experiences with "tree." The knowledge of "tree" is intimately related to the action and experience he has had -- it is always contextual and never separated from the knower. While this is often taken as a justification for work with manipulatives, it has to be emphasized that these are mental constructs, so that while manipulatives are certainly necessary, they are only part of the activity and the activity must not end there. In successful teaching of mathematics, manipulatives are used as a part of the mental construct, but then, students must translate that construct to an abstract construct, moving first through imaging and then to being able to deal with abstract numbers. This course is taught so that the students are required to construct the meaning of each of the

topics addressed. They begin by working out each concept with manipulatives, and then verbalize the concept in cooperative learning groups. Still working in teams, they apply the concept to a real problem, sketching it out as they go, and finally derive the algorithm that holds true in all situations involving this particular concept. It is particularly in the area of visualizing the problem that technology, both computer technology and also video are often useful. Because many of the commercial computer packages in math require students to construct a mental image as they solve problems, these packages reinforce the premise of imaging the problem. There are also a number of video programs available which promote the visualization of the problems.

When teachers teach they often list certain information as "truth" for the students, but, from the perspective of the learner, the statement is true only if, within the experiential constraints of the learner, it makes sense. Within our own minds, we have a scheme of our own "truth." Unless the teacher addresses the students' own assertions, the students continue to maintain it as true. If this truth is challenged, the students are forced to reexamine it to determine the seriousness of the challenge and decide whether or not to modify it. In this way, students are led to reflect on their thinking. This suggests that we take what we know as "true" and overturn it only when the new learning does not make sense in the old framework. Many of the preservice education students have learned mathematics as a series of rules and feel that they know these rules as "true." It is not until they attempt to apply these rules in problem solving situations that they begin to construct a new meaning for math, and to learn process rather than rules.

Problem solving

The National Council of Teachers of Mathematics cites problem solving as one of its top priorities, as does the National Commission on Excellence in Education. In spite of all the agreement on the need for an improvement in students' problem solving ability, there is still little consensus on what is meant by problem solving behavior. For this course, problem solving is defined as the student's knowledge of the process of obtaining the solution. Story problems are used in the class, with students writing most of their own problems to convey specific knowledge. In addition, a simple spread sheet is used on the computer and the students plan series of word problems which require a spread sheet and/or calculators to solve.

Real world connections

Since this is a methods course, the emphasis is on how people learn mathematics and how to teach mathematics so that it can be learned. In too many classrooms, students are engaged in exchanging performances for grades. Learning is not a goal, but is a byproduct of the work. When students are doing school assignments, their goal is often to complete the task, to get it "right" or to finish quickly. Learning outside of formal school setting is sense-making. Because these students are preparing to teach the subject, they see the real life connection as the ability to teach and, in that context, each student must build his or her own set of teaching notes. As part of the course, however, they must also learn how to make

mathematics make sense to those whom they intend to teach. In order to make that happen, there is an emphasis on the solving of real problems. These problems are large problems, with no easy answers, that are of sufficient interest to students that they will care about solving them. Learning becomes a process of meaning-making rather than the sterile academic game of figuring out what the teacher wants. There are a number of excellent computer packages which center around the solving of one particular problem which requires planning and thought to solve. These are quite useful in this context and the class is given the opportunity to examine a number of these packages, evaluate them, and then to incorporate them into their own teaching.

Verbalization of the process

In the class, students examine each major area addressed in N-6 mathematics. In cooperative learning groups, they use manipulatives, create images, and present the algorithm. They are then required to write each of these steps in their own journals, which are collected as an assessment of their learning. These steps are taken because the discussion in the group promotes the generation of new ideas and the formulation of new connections with prior knowledge, and the sharing permits students to identify the inconsistencies or deficiencies in their own knowledge. The journal writing then gives them the opportunity to re-conceptualize their thoughts as they plan how to convey the content to others. This also permits a more authentic assessment of the student's knowledge than any standard test which tests content knowledge. If the basic premise is to change the understanding of the process, authentic assessment requires that the students, in some form, demonstrate show knowledge of content and knowledge of how to convey that content to others. Moreover, this models the verbalization of problem solving, in both written and oral form, as an excellent method for N-6 students to learn as well.

Students also prepare a simple multimedia package on measurement. The attempt here is to show how knowledge is interrelated and how these relationships can be taught. Groups of students research the content, plan their presentations, and plan the links between the concepts by preparing concept maps. They then prepare simple programs and share these programs.

Use of technology

In summary, there are a number of activities requiring technology (computers, video, etc.) in the teaching of elementary mathematics. These are as follows:

1. An examination of existing commercial software.
   Teams of two-three students work with and discuss available programs. Students plan lessons around the use of the software.
2. An examination of appropriate videos.
   Videos are available to be borrowed by students. There is a discussion of appropriate video use and the opportunity to view some of the tapes. After that, students who wish to borrow a video to help in the preparation of their

notebooks are urged to do so.

3. Calculators

   Calculator usage is integrated throughout the course. Use of calculators, including using memory, using a +/- key, and planning appropriate math lessons which require calculators is taught. Students are expected to use the calculator in planning problem solving activities.

4. Computer usage

   a. **Programming**

   As part of the topic on geometry and spatial reasoning, students learn some of the simple commands in LOGO, a programming language which is often begun in the elementary school.

   b. **Examination of software**

   Students examine a number of software packages and evaluate them. They also plan how these might best be used within the curriculum.

   c.. **Preparing a very simple multimedia presentation**

   in IBM Linkway presentation on measurement.

COURSE SYLLABUS

In the past three years, the National Council for the Teaching of Mathematics (NCTM) has prepared a series of standards for K-8 math teaching. These standards have been widely accepted throughout the country as a more effective way to produce students comfortable with using numbers to problem solve rather than producing those able to compute. This course will use cooperative learning to explore math in a problem solving mode. It asks students to construct the meaning of the numbers just as young children are asked to construct their own meaning.

During class, groups of students meet to work on problem solving strategies dealing with each topic. They then prepare a notebook with a plan for each topic.

Course Evaluation:

Professionalism (includes presence and participation) - 20%
Notebook - 80%

Notebook

Students keep a math teaching notebook throughout the term. They use a loose-leaf notebook since they turn in lessons at the end of each week. For each lesson, the journal entry:

1. Identifies specific learning objectives.

2. Explains the concept for the concrete learner using some type of manipulative. It starts with manipulatives, moves through a symbolic stage, estimates, and then shows how the "rule" came to be, that is, it develops the algorithm. Overhead projectors, computers with projectors, Cuisinaire rods and blocks, Unifix cubes, base ten blocks, chip trading pieces, metric tapes, weights and volumes and other manipulatives are available during class as students work out the problems.

3. Moves to explaining the concept using drawings and pictures.

4. Where appropriate, shows how estimation should be used.

5. Moves to an abstract explanation.

Grading is consecutive. The first plan submitted is not graded but is given extensive feedback on the plan. It is expected that the first few lessons will be graded lower until students have learned how to prepare the lessons. When/if the grades on the journal improve, that is taken into consideration in calculating the grade.

The notebook is graded on the following criteria:

1) The information is correct;
2) The explanation can be understood by someone who does not know the subject;
3) The explanation is complete;
4) Originality;
5) Clear, logical order;
6) A sequence of concepts;
7) A smooth transition between the manipulatives, the diagrams, and the verbal explanation.

Computers and Technology

There will also be a series of activities showing how technology (computers, video, etc.) is used in the teaching of elementary mathematics. These will be as follows:

1. **An examination of existing commercial software**
Students will evaluate commercial math packages. Groups of students are assigned a specific computer program series and decide how that should be incorporated into their own lesson plans. These specific programs cover time and measurement, the use of a spread sheet to teach math, and spatial reasoning. The groups present their plans to the class.

2. **An examination of appropriate videos**
Videos are available to be borrowed by students. There will be a short discussion of appropriate video use and an opportunity to view programs. After that, students who wish to borrow a video to help in the preparation of the notebook are urged to do so.

3. **Calculators**
Calculator usage will be integrated throughout the course. Time will be spent discussing use of memory, use of +/- key, and application of calculator use in specific math teaching. Students are expected to use the calculator in planning problem solving activities.

4. **Programming**
As part of the unit on spatial reasoning, students will learn some of the simple commands in LOGO, a programming language which is often begun in the elementary school.

5. **Preparing a very simple multimedia presentation.**
Students will prepare a Linkway presentation on the metric system. Groups of students are given information on the metric system. As a group, they prepare a multimedia program designed to teach the metric system. They choose the content that should be incorporated, do a concept map of the content, type in the content, insert appropriate link buttons, and add pictures and sound as time permits.

The class also works on a thematic unit incorporating the handling of quantitative data into some aspect of science and/or social studies. Appropriate videos are shown and are available for loan as students work on their units.

List of Topics

- Addition and subtraction, including those with regrouping
- Multiplication with and without regrouping
- Division - both long and short. Include the scaffolding approach
- Addition and subtraction of fractions
    a. when two fractions have the same denominator
    b. with a mixed numeral in fractional form
    c. with an improper fraction as a mixed numeral
    d. with unlike denominators including mixed numerals and improper fractions.
- Equivalent fractions
- Multiplication with fractions
- Division with fractions
- Addition and subtraction of decimals with regrouping
- Multiplication with decimals

- Division with decimals including:
    a. when only the quotient is a decimal;
    b. when only the dividend is a decimal;
    c. when both the divisor and the dividend are decimals.
- Using ratios and proportions
- Calculating percent from a fraction or decimal
- Geometry - calculate area, perimeter and volume of a rectangular solid
- Calculate pi, area, and circumference of circles
- Spatial reasoning - see computer/technology
- Measurement - see computer/technology
- Handling of quantitative data (statistics) - part of thematic unit.

Sandra Flank, Ph.D. Fordham University, has been a faculty member in the Department of Teacher Education at Pace University - Westchester for the past 21 years. In that position, she has taught courses primarily in science, math, and technology education as well as being responsible for directing a grant from IBM to the Department of Teacher Education to examine integration of technology into the curriculum. Dr. Flank has been the author of numerous publications in journals such as *ChemTech, Science Scope, The Science Teacher, et cetera.* She has been the recipient of grants in science and math including New York State Eisenhower grants and National Science Foundation grants. In 1992-93, Dr. Flank was awarded the Kenan Outstanding Teacher Award by Pace University. During that year, she also served as Scholar-in-Residence at the Westchester Education Coalition. She was Chair of Teacher Education at Pace from 1988 to 1993.

Seven

THEORY AND PRACTICE OF INSTRUCTION

Mildred Haipt, O.S.U.
College of New Rochelle, New Rochelle, New York

INTRODUCTION

This course is designed to develop teachers' planning skills and to introduce them to the content and methods of the social studies curriculum. It is process-oriented insofar as the class is divided into small groups of 3 or 4. After reviewing the K-12 social studies curriculum, the groups decide on a social studies unit they want to develop.

During the semester, each student in the group prepares a couple of formal lesson plans to implement some part of the unit. First drafts of the lesson plans are critiqued in conference with the instructor and fellow students. Eventually, students select one of their lessons to present to the other members of the class. The lessons are videotaped on the students' personal cassettes which they keep for further review and reference.

Class time is allocated for group members to confer with one another. This is supplemented by communication and meetings outside of class. Various methods appropriate for the teaching of social studies are presented in mini-lectures and studied through the use of a particular form of cooperative learning called JIGSAW.

Commercially prepared videocassettes are also used to demonstrate methods of evaluation such as portfolios. Viewing of the tapes is followed by extensive large and small group discussions.

Students are required to identify key concepts contained in their lessons plans and to incorporate them into crossword puzzles with the help of the software library in the college's Computer Center. They are encouraged to include in their plans other kinds of computer programs appropriate for elementary and secondary students which contribute to the full implementation of their units.

Given the constraints of a two-credit course and the time needed to become adept at long and short-range planning, the evolution of this Theory and Practice of Instruction course

begins to incorporate technology without sacrificing the many valued interactions between and among students and faculty. It is expected that the planning skills acquired in this course will provide a foundation for subsequent methods courses.

COURSE SYLLABUS

COURSE DESCRIPTION:

EDU 039 Develops teaching skills such as writing objectives, selecting instructional materials, establishing set, questioning, drawing closure, evaluating student achievement, and planning further learning activities. Subject matter for the unit and lesson plans is drawn from the social studies curriculum.

REQUIRED TEXT & Videocassette:

Woolever, Roberta M. & Scott, Kathryn P. (1988). Active Learning in Social Studies: Promoting Cognitive and Social Growth. Glenview, Illinois: Scott, Foresman and Company.

Supplementary materials related to class discussions and assignments will be placed on reserve in Gill Library and found in the CC-Computer Center.

COURSE OBJECTIVES:

Given the course, Theory and Practice of Instruction, you will be able:

1. To plan lessons and to successfully teach at least one of them.

2. To organize a body of information to form a sequentially developed unit plan, which includes a variety of teaching techniques and learning experiences.

3. To devise alternative methods of evaluating student achievement.

4. To incorporate the use of computers and children's literature in the teaching of social studies.

5. To describe the course of study or curriculum in the area of social studies from K-12.

COURSE REQUIREMENTS & FINAL EVALUATION

1. Regular attendance, active class participation, prompt completion of regular assignments. (10%)

2. Submission of a minimum of two lesson plans and a group unit plan to which you have contributed. (30%)

3. Teaching, videotaping and critiquing a lesson. You will need to provide your personal videocassette which contains the lessons you have taught during your teacher education program. (10%)

4. The critique of computer software appropriate in the teaching of social studies and a sample product, prepared with computer software, which can be used in the implementation of your unit. Software for the APPLE and IBM computers are in the CC-Computer Center. (10%)

5. A written review and critique of 3 children's literature books which can be used in the teaching of your social studies unit. (10%)

6. A written review and critique of a journal article from Social Education or the like which discusses a current issue in the field of social studies education. (10%)

7. A mid-term and final examination. (20%)

NB: You are required to type or use word processor for all written assignments.

Course Outline and Assignments - (WA) = Written Assignment

Date	Topic	Readings and Papers Due
Day 1	What is social studies and what does it include?	
Day 2	Social Science Disc.	Ch 1,6 pp.3-22 & 105-133
Day 3	The Unit Approach	Ch 7 pp. 135-161, (WA)critique of article

Day 4	Selecting & Writing Objectives	Ch 8 pp. 163-184 & Ch 9 pp. 187-205
Day 5	Providing Variety in Instruction (Lesson Plan) VIDEO of SS Lesson	Ch 10 pp. 207-240 (WA)critique of 1 liter. bk. pertaining to unit
Day 6	Adapting Instruction for Individual Students JIGSAW (Coop. Learn., Learn.Centers, Computer Instr.)	Ch 11 pp. 243-283 (WA)critique 2nd child. liter. book
Day 7	Teaching to Promote JIGSAW Higher-level Thinking (Questioning)	Ch 12 pp. 285-321 (WA) Lesson Plan #1
Day 8	Promoting Educ. Equity Gender Bias in Class.	Ch 16 pp. 415-444 (WA)draft of Unit Plan
Day 9	Evaluating Pupil Prog. VIDEO Portfolio Assess. Ind. Conf.of Rev. L.P.#1	Ch 17 pp. 447-464
Day 10	Computer Programs & Social Studies Educ.	MID-TERM (WA)critique of 3rd child. liter. book
Day 11	Integrating Child. Lit. with Social Studies	(WA)Lesson Plan #2
Day 12	Developing Criteria for Evaluation of Lessons	
Day 13	Videotaping & Critiques of Students' Lessons	Prepartion of lesson for presentation

Day 14	Videotaping & Critiques of Students' Lessons	
Day 15	Group Eval. of Unit Plan	(WA)final UNIT Plan
Day 16	Final Examination	

Sr. Mildred Haipt, Ph.D., is a Professor of Education & Chair of the Education Department College of New Rochelle, School of Arts & Sciences. In the early 1980's, the Graduate School at the College of New Rochelle sponsored a series of talks on computers in education, given by professors from Bank Street College of Education and Columbia Teachers College. She attended these lectures and, subsequently, participated in a faculty workshop on computers. It was not until 1988 when she acquired a personal computer that she began word processing in earnest. Since then, she has used the computer for analyzing research data and writing memos, reports, syllabi, letters and other kinds of personal and professional papers. Membership in the Westchester Teacher Education Group's Task Force on Technology has enabled her to focus on the use of technology in teacher education. She believes that teachers learn to teach not only from WHAT they are taught but, more importantly, HOW they are taught. In a rapidly moving technological society, the use of computers and other forms of technology as a method of instruction and means to acquire knowledge, attitudes, and skills is essential. The design of the Theory and Practice of Instruction course represents one effort to integrate technology in a methods course. Dr. Haipt received her doctorate from the University of Maryland where she was an Education Professions Development Act Fellow in a Triple T (Training of Teachers of Teachers) program. In addition to 25 years of college teaching as a teacher educator, she has taught homebound instruction to handicapped children and social studies at the secondary school level.

Eight

METHODS OF TEACHING ELEMENTARY SCHOOL MATHEMATICS

Susan F. Jacobs
Manhattanville College, Purchase, New York

INTRODUCTION

I teach two courses on both the graduate and undergraduate levels: Elementary Mathematics methods and Elementary Science methods courses. The post-secondary liberal arts education of most students entering the Manhattanville elementary program includes only one semester of science and one semester of mathematics, as required by New York State for teacher certification. Our program gives students one semester of science methods and one semester of mathematics methods. Students generally do not take additional mathematics or science courses beyond those required methods courses. Each methods course must therefore manage to incorporate science or mathematics content, history and philosophy of the discipline, learning theory, methods, and classroom strategies. There is little or no time left for hands-on computer training.

Our students take a required course in Elementary Educational Technology, but they may take it before the mathematics and science methods courses, after them, or concurrently. Individual students plan the sequence of their courses to fit in with their own busy schedules, which may involve care of a family, availability of babysitters, and full or part time work. Therefore I plan my courses knowing that many of my students have had little or no prior computer experience.

My computer integration project underwent several revisions. I was unable to decide how best to share with my students all that I had learned and was learning in the WTEG Technology Task Force project. At first I intended to devote perhaps one or two hours in each course to a demonstration of interactive mathematics-related software designed for children, to supplement the work done in our Ed Tech course. In anticipation of that goal, I spent countless rather enjoyable hours programming a Toolbook tesselations activity for children to use. That Toolbook project is languishing, incomplete, because I realized that it

was very time-consuming, of limited application, and certainly of limited relevance to the WTEG project. My students do not have access to Windows and Toolbook software, and computers in the our computer labs are, for practical reasons of security, not equipped with a mouse. I decided instead to work on developing tools and strategies to teach my future classroom teachers to use the computer to prepare instructional, planning, and record keeping materials.

I use the computer to prepare materials for my course as well as sample materials that elementary teachers might use. These include assignment sheets, handouts of many kinds, examinations, and forms students may use to record and analyse data. These techniques have been integrated into my courses and can be used by my students to help them become more productive teachers.

I created an Excel spreadsheet to index classroom activities for mathematics and science by topic and concept. With relatively little work I created a useful tool for the classroom teacher. I myself use it when planning my own classes, as well as sharing it with my students so they can use it in planning for theirs. I keep students' grades on a spreadsheet and share with them the use of Excel as a grading system. I never did get my copy of "Gradebook" to work, but I have made my own template.

I ask my students to prepare all formal assignments on a computer. I offer to give assistance by appointment to any student needing help with the computer or with a word-processing language. One student asked to learn Lotus 1-2-3 and now uses it in her food co-op ordering system. I am sure that this experience will encourage her to use a spreadsheet, where applicable, in her teaching.

I offer to help any Faculty member with the computer on an informal basis. I assist my department by helping to interpret and utilize the facilities offered by the college Information Services Department, especially in help with understanding data entry and retrieval, defining our department needs, and generating departmental reports.

All in all, the WTEG Technology Task Force has been most helpful in providing me with a variety of tools and helping me to discover ways in which I might put some of them to immediate practical use. The Multi-Media techniques that I learned will, I am sure, be put to use in the future. Over time, more of what I have learned will be implemented as opportunities arise. Most importantly, I have a direction in which to proceed and a strengthened conviction that it is worth proceeding in that direction.

COURSE SYLLABUS

COURSE OBJECTIVES

This course will explore the mathematical ideas that underlie elementary school arithmetic. We will use problem solving methods, practical applications, mathematical models, estimation, and mental arithmetic as students learn new ways to think with numbers. Standard and invented algorithms will be investigated using manipulative materials, games, and calculators. Methods to help children develop number sense and spatial sense will be explored. Students will share ways to use a computer to assist in preparation of instructional, planning, and record keeping materials.

Particular attention will be given to the following topics:

Number sense:
- counting and numeration
- place value
- addition and subtraction
- multiplication and division, prime numbers, multiples and divisibility
- fractions, decimals, and percents

Spatial Sense:
- shapes
- 1, 2, and 3 dimensions
- patterns
- maps
- graphs and charts

The course will emphasize the importance of relating instruction to the informal mathematical knowledge that the child brings to school. Students will investigate informal methods of assessing children's mathematical thinking in the classroom.

Students will learn to recognize commonly shared areas of difficulty and sources of math anxiety. In addition, students will explore ways of adapting mathematics instruction to address the needs of diverse groups of students including males and females, students with disabilities, gifted students, and students from limited English proficiency backgrounds.

COURSE OUTLINE

COURSE TEXT:

Cruikshank, D. E. and Sheffield, L. J., Teaching and Learning Elementary and Middle School Mathematics. New York: Merrill, 1992.

ON RESERVE, Chapters from:

Baroody, A. J. Children's Mathematical Thinking. New York: Teachers College Press, 1987.

Fennema, E. and Leder, G. C., (Eds.) Mathematics and Gender. New York: Teachers College Press, 1990.

Ginsburg, H. P. Children's Arithmetic. (Second Edition). Austin, Texas: Pro- Ed, 1989.

TOPIC for WEEKS OF:		REQUIRED READING
09/09, 09/16	Numeration and Counting Number Systems: the Integers	Text, Chs. 3, 4, 5, and 6
09/23, 09/30	Addition and Subtraction	Text, Ch. 7 Baroody, Chs. 3 and 6 Ginsburg, Chs. 3 and 6
10/07, 10/14, 10/21	Multiplication and Division. Primes and Multiples	Text. Chs. 8, 12, and 13 Fennema & Leder, Ch. 2
10/28, 11/04, 11/11	Rational Numbers Fractions and Percents.	Text, Chs. 9, 10, and 11 Fennema & Leder, Ch. 8
11/18, 12/02, 12/09	Fractions and Decimals.	Text, Chs. 14 and 15

There will be a final exam during exam week.

ASSIGNMENTS

Regular **attendance and class participation** are essential to success. Shared discussions and presentations are integral to the goals of the course. Many activities require hands-on practice and are difficult to learn by copying a classmate's notes.

Student **presentations** will provide practical experience in communicating mathematical ideas. Presenters will share a mathematical activity with the class, and provide each classmate with a copy of a one page description of the activity. Presentations should take from ten to twenty minutes and should involve the class in active participation.

Students frequently will be asked to **write briefly in class** in order to practice reflecting on events and ideas that are part of the class, and to practice written mathematics.

Each student will be asked to keep a **journal**. This writing will be in response to classwork, to readings, to questions that arise in class, to course assignments, and to other questions and reflections of any kind. Its purpose will be to encourage reflection, to serve as a model of journal activity appropriate for the elementary school math student, and to maintain a two-way line of written communication between the instructor and individual students. Suggestions, problems, and goals shared in the journals will influence the direction of the course. Journals will be handed in every two weeks. Looseleaf notebook paper in a pocket folder is appropriate.

Each student will visit three different elementary school mathematics classes, of which at least one is in a public school. **Observations** will be described in writing.

Each student will plan and conduct an informal **interview** with an elementary school child, following the flexible interviewing guidelines discussed in class and demonstrated in videotaped examples. A description of the interview, its planning, execution, and results, will be described in a written document. Students will tape record the interview, and submit the tape with the written document.

Students are expected to type assignments on a **computer** or word processor. Instruction and assistance with computer or word processing work will be provided as needed, by appointment.

A **final exam** will be based on the required readings and on class work.

Summary:	**class participation, presentation to class**	**20%**
	writing in class	**20%**
	journals and classroom observations	**20%**
	interview	**20%**
	final exam	**20%**

Susan F. Jacobs, Ed.D., Teachers College/Columbia, is a full-time member of the Manhattanville faculty in the department of Teacher Education, teaching graduate and undergraduate methods courses in elementary mathematics and science education. Since the Fall of 1992 she has served as Coordinator of Mathematics, Science, and Computer Education. She has developed creative strategies for working with her students, including regular before-class tutorial sessions, hands-on, activity-based lessons, student mathematics and science journal writing, and cooperative learning experiences. Manhattanville College offers Saturday morning instruction to elementary school children. Dr. Jacobs teaches two mathematics classes in the "Kids at College" program. Formerly she has worked as an elementary school mathematics and science teacher, and has ten years experience as a computer programmer and programmer-analyst.

Nine

CLASSROOM MANAGEMENT

Br. Daniel B. McIlmurray
Iona College, New Rochelle, New York

INTRODUCTION

Classroom management is an introductory course in our teaching preparation program. As such, it will have students who desire to be either elementary or secondary school teachers. There may also be a few students who are not decided on a career but are considering teaching as an option.

This course attempts to give each student a command of the theoretical knowledge about learning, attitudes that foster learning, and genuine human relations, the importance of a command of knowledge of subject matter, and the importance of technology that facilities student learning.

Beginning teachers frequently face the difficult situation of receiving different, contradictory messages from professors and from teachers with whom they work in the field. While the professors are apt to focus on theoretical knowledge the experienced teacher may often advise them "Listen to me. I'll tell you what works in real life."

In order to help students internalize the theories of teaching to the point where they can be used to interpret and solve practical problems, the Inner-City Stimulation Laboratory is used.

An inner-city elementary school is re-created wherein participants assume the role of Pat Taylor, a sixth grade teacher, and practice solving classroom problems. These problems were identified by 287 teachers, of fourteen inner city schools, located in twelve American cities. each problem is presented on film, through role plays, as a playlet, as a written incident, or as some combination.

If a teacher is to be effective, the individual must be familiar with children and their developmental stages. They must know something about events outside the school and classroom. They must have a philosophy of education to help guide them in their role as teachers.

COURSE SYLLABUS

This course is designed to introduce students to the field of teaching. The course covers the following topics: classroom management, instructional planning, instructional objectives, lesson presentation, skills, questioning skills, evaluation, and the use of technology.

These topics are presented and discussed in class and are integrated with 34 problems that were identified by 287 teachers of fourteen inner city schools. The results of this method of presentation is a consistent and cumulative review of what has been previously learned. Students become reflective learners as they review and revise previously held ideas and theories. The aim in discussing each film is to identify the good things that the teacher is doing and to identify areas that could be improved in order to avoid classroom problems.

This course was revised during the Summer of 1992 and implemented during the Fall, 1992. The purpose of revising the course was to introduce the use of technology in the classroom. All of the students who take EDU 201 in the fall semester then are assigned to an elementary or secondary school during the month of January to fulfill their introductory teaching experience (EDU 250). The feedback from cooperating teachers was that the students should be aware of the applications of technology in education. Since our students do not take a formal course in the use of computers in education until senior year, it was felt that the topic should e touched on in the introductory course.

In the fall semester, students were introduced to `Microsoft Windows and Toolbook.' All of the students had already taken a basic course in computers, or were taking such a course as part of their core curriculum. The objectives in EDU 201 were to introduce the students to Toolbook and to construct buttons and fields.

All of the students were unfamiliar with Microsoft Windows and the first objective was to make them as comfortable as possible in this new environment. They must learn to start Toolbook, save a book, and quit Toolbook.

The students must learn Toolbook by using it. This means that the students must pull down menus to see what they do, and use the tools to draw shapes and fields on the screen. One of the objectives was to allow the students to construct buttons and fields.

The students had to see that with Toolbook they could collect information and that this information could be shared with others. A simple program was constructed using Bloom's Taxonomy of Educational Objectives: Cognitive Domain. The students were required to spend one day or part of a day each week in an elementary or secondary classroom. Their task was to record every question that a teacher had during each classroom period.

The students were then to access the program using Bloom's Taxonomy in Toolbook. The students were to categorize the questions they had copied down during their classroom visits and write them down in the appropriate categories in the program. The students then had to count the number of questions in each category and list the number of questions for each category in a summary sheet that was provided at the end of the program. Using this information, the student were then to make conclusions about the types of questions that teaches asked.

In order to complete the above task, the students had to be familiar with fields, how to use fields, and how to navigate through a program using buttons.

1. TERM PROJECT

   A project will be completed using Microsoft Toolbook on either the Cognitive Domain of Bloom's Taxonomy or Lesson Presentation Skills (set induction, explaining behavior, and closure).

   In order to complete the above project the student must complete a number of classroom visits (minimum of ***five***) and report the results using the above Toolbook programs.

2. Marks will be based on the following distribution:

   a. Term Project.....10% of final grade
   b. Examinations.....90% of final grade

3. There will be a series of examinations on the following dates:
   a. October 6, 1993
   b. November 10, 1993
   c. FINAL EXAMINATION

Please write these dates in your calendar books as there will be no make-up examinations. It is your responsibility to make sure that no other appointment is scheduled for the above dates.

COURSE OUTLINE

I. Lessons as Teaching-Learning Interactions
   a. What is a lesson?
   b. Variable in a teaching-learning interaction
   c. Discipline and structure
   d. Students

II. Types of Teaching-Learning Interactions
- a. What are interactions?
- b. Where teaching-learning interactions differ
- c. Developmental approach
- d. Use of computer-based instruction
  1. Introducing Toolbook
  2. Creating pages
  3. Creating fields
  4. Creating hotwords and buttons
  5. Creating graphic objects

III. Different Types of Plans
- a. Unit Plan
- b. Resource file
- c. Materials Summary

IV. Lesson Plan
- a. Components
- b. Comparing the developmental lesson plan the Hunter lesson plan
- c. Life cycle of a lesson plan

V. Lesson Presentation Skills
- a. Set Induction and its Uses
- b. Explaining behavior and Its Uses
- c. Closure and Its Uses

VI. Aim and Motivation
- a. Characteristics of Effect Aims or Behavioral Objectives
- b. Types of Motivation

VII. Questioning
- a. Why ask questions?
- b. Formulating questions
- c. Poor questions
- d. Bloom's Taxonomy of Educational Objectives: Cognitive Domain
  1. Categories of questions in the cognitive domain
  2. Affective domain
  3. Psychomotor domain
- e. Presenting questions effectively
- f. Using student responses effectively

VIII.	Demonstrations a. Advantages and limitations b. Preparation c. Presentation	No. 23
IX.	Audio-Visual Aids	Nos. 22, 23
X.	Summaries a. Functions b. When you summarize c. How you summarize	No. 16
XI.	Assignments a. Types b. Guidelines	No. 24
XII.	Enrichments a. Types b. Evaluation	Nos. 22, 23
XIII.	Evaluating the Interaction a. Types b. Functions c. Objective questions d. Essays	Nos. 25, 26, 27
XIV.	Laboratory and Workshop Experience a. Types b. Functions	No. 15
XV.	Discussions a. Types b. Preparation c. Teacher's Role	
XVI.	Review Lessons a. What a review lessons is b. Components	Nos. 17, 18
VVII.	Supervised Study a. Guidelines b. Preparation c. Materials	

XVIII.	Field Trip a. Functions b. Planning	Nos. 22, 23
XIV.	Practical Classroom Problems	Nos. 32, 31, 32
XX.	Discipline a. Role of Teacher b. Methods	Nos. 30, 31, 32
XXI.	Theories of Education a. Knowledge Base for Education	Nos. 33, 36

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Boyer, E. (1983). *High School.* New York: Harper & Row.

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Lerner, J. (1985). *Learning disabilities: Theories, diagnosis, and teaching strategies (4th ed.)* Boston: Houghton Mifflin.

Drayer, A. (1979). *Problems in middle and high school teaching.* Boston: Allyn & Bacon.

Fisher, L.. Schimmel, D., & Kelly, C. (1987). *Teachers and the law (2nd ed.).* New York: Longman, Inc.

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Krathwohl, D., Bloom, B., & Masia, B. (1964). *Taxonomy of educational objectives. The classification of educational goals. Handbook II Affective domain.* New York: David McKay.

Kubiszyn, T. & Burich, G. (1987). *Educational testing and measurement: Classroom application and practice (2nd edition).* Glenview, IL: Scott Foresman.

Lerner, J. (1985). *Learning disabilities: Theories, diagnosis and teaching strategies (4th ed.)* Boston: Houghton Mifflin.

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Schon, D.A. (1987). *Educating the reflective practioner.* San Francisco: Jossey-Bass.

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Br. Daniel B. McIlmurray, Ed.D., is Associate Professor of Education at Iona College in New Rochelle, NY. His career includes accomplishments as an administrator and a teacher. A graduate of Iona College (B.A.), St. John's University (MS in Ed.), Boston University (CAGS) and St. John's University (Ed.D.), Br. Daniel B. McIlmurray has been a teacher on the elementary, secondary, and college level. He has specialized in Administration and Supervision of educational institutions. As a principal in both Boston, Massachusetts and Newark, New Jersey he has worked vigorously, on both the academic and institutional sides, to encourage professional development for personnel involved at all levels of these fields. As the Superintendent of Schools for the Christian Brothers, he supervised 5 grammar schools and 13 secondary schools. He attempted to form caring institutions that demonstrated a respect for essential human values and a love for learning. For the past 22 years he has been on the faculty of the Education Department of Iona College. He has served as the Coordinator of the Office of Education and the Chairman of the Education Department. He is interested in developing ways to use technology at the undergraduate and graduate level.

Ten

MATHEMATICS FOR THE ELEMENTARY CLASSROOM TEACHER

Lucille Peterson
Sarah Lawrence College, Bronxville, New York

INTRODUCTION

This course will provide a strong foundation for an understanding of children's developing thinking about spatial concepts, number and numeration, operations, and measurement. It will emphasize the importance of inquiry, experimentation, and pattern-searching in the formation of generalizations. There will be exposure to a wide range of manipulative materials, and emphasis on problem solving, relating mathematics to the real world, and a developmental view of mathematical learning which will emphasize assessment of individual learning styles.

Beginning in the Fall of 1994, this course will be expanded and redesigned as a two-semester course incorporating both technology and mathematics.

COURSE OUTLINE

REQUIREMENTS:

Each student will be required to keep a journal of personal growth and development as a mathematics teacher. Journals will be written at the end of each class period.

Each student will be expected to contribute to a computer database of Classroom and Computer Math Games. Students may have a copy of the database at the completion of the course.

Requirements for the group presentations will be derived in class.

FOLDER PROCEDURES:

Each week you will take home a folder which contains materials related to an aspect of teaching mathematics in elementary school. Included in the folder is an assignment wheet which specifies the reading to be accomplished for that week. You are asked to respond to the readings and place one copy of your response in the folder along with the materials. A second copy will be given to the instructor. A third copy for your own records is suggested. As you receive successive folders you will be able to read how other students have responded to the reading and you may append your comments on their ideas if you wish. You will receive YOUR responses with all associated comments three weeks before the end of the course. These written conversations will be used as a basis for a group discussion at that time.

Please take the folders in numerical order in order to ensure their availability. Please sign that you have taken the folder and note the date. Check to make sure that everything listed on the Table of Contents is included in the folder. The folders MUST be returned to the class the following week so that the next persons will be able to receive them. Response papers are required each week.

Weekly class activities will generate problems and ideas which may require additional attention during the week: a problem to think about, a game to play, a practice interview, a visit to the children's section of the library, for example. Full participation in the class will necessitate attention to these activities. All of such additional activities can be entered and discussed in the journal.

FOLDER ONE
CONTENTS

1.
Curriculum and Evaluation Standards for School Mathematics
National Council of Teachers of Mathematics
1906 Association Drive
Reston, Virginia 22091
703-620-9840
FAX# 703-476-2970

2.
Elementary School Mathematics: Teaching Developmentally
John A. Van De Walle
Longman Publishing Group
The Longman Building, 95 Church Street, White Plains, NY 10601
(914) 993-5000

3.
Primary School Mathematics
Elizabeth Williams and Hilary Shuard
Longman Publishing Group
The Longman Building, 95 Church Street, White Plains, NY 10601
(914) 993-5000

4.
About Teaching Mathematics: A K-8 Resource
Marilyn Burns
Marilyn Burns Education Associates
150 Gate 5 Road, Suite 101, Sausalito, CA 94965
1992

5.
Library List 1992
Compiled by Edward C. Wallace
Association of Mathematics Teachers of New York State
5 Elsmere Avenue, Delmar, NY 12054

READING ASSIGNMENT

Reference #1: Read Introduction pp.1-15
Read Curriculum Standards for Grades K-4 pp. 15-65 or Grades 5-8 pp. 65-123. Read other material as interest and time permit.

References #2, #3 & #4: Browse through these resources to see which one(s) you would like to include in your own reference library.

Reference #5: This bibliography may be helpful in building your personal mathematics education library.

Write a response paper and include in folder.

FOLDER TWO
CONTENTS

1.
Read Any Good Math Lately?
David J. Whitin and Sandra Wilde
Heineman Educational Books, Inc.
361 Hanover Street, Portsmouth, New Hampshire 03801

2.
Books You Can Count On: Linking Mathematics and Literature
Rachel Griffiths and Margaret Clyne
Heinemann Educational Books, Inc.
361 Hanover Street, Portsmouth, NH 03801

READING ASSIGNMENT

Reference #1: Read the entire book.

References #2: Read as your interest dictates

Make a visit to a local public library and examine their collection of children's literature. Take a look at some of the books discussed in your reading.

Select a book from the children's section of your local or school library and generate a mathematics experience for use with children. Enclose a copy in the folder.

FOLDER THREE
CONTENTS

1.
Mathematics Assessment
Jean Kerr Stenmark, Editor
National Council of Teachers of Mathematics
1906 Association Drive
Reston, Virginia 22091
703-620-9840
FAX# 703-476-2970

2.
Measuring UP: Prototypes for Mathematics Assessment
Mathematical Sciences Education Board
National Research Council
National Academy Press
2101 Constitution Avenue, NW
Washington, D.C. 20418
1993

3.
Mathematics Assessment:
Myths, Models, Good Questions and Practical Suggestions
Edited by Jean Kerr Stenmark
National Council of Teachers of Mathematics
1906 Association Drive, Reston, VA 22091
1991

READING ASSIGNMENT

References #1 & #3. Browse and read according to your interest.

Reference #2: Read introduction and select several prototypes to read carefully.

Write a response paper and include in folder.
Respond to other students' papers included in the folder if you wish.

FOLDER FOUR
CONTENTS

1.

Learning From Children
Ed Labinowicz
Addison-Wesley Publishing Company
Reading, Massachusetts
617-944-3700
1985

READING ASSIGNMENT

Reference #1: Read Part One pp. 1-39; Appendix B, F
Read Part Two Chapters 3, 4, 7 and Part Three Chapters 10, 11

Work with a child or adult in an interview setting and report on the experience (no names, please). You may duplicate one of the interview experiences in the text or design your own.

Include a copy of your interview report in the folder.

FOLDER FIVE
CONTENTS

1.

Young Children Reinvent Arithmetic
Constance Kamii
Teachers College Press
P.O. Box 2032
Colchester, Vermont 05449
FAX 800-878-1102
800-445-6638
1985

2.

Mathematics with Reason
Sue Atkinson, Editor
Heinemann Educational Books, Inc.
361 Hanover Street
Portsmouth, New Hampshire 03801-3959
1992

3.
Number in preschool & kindergarten
Constance Kamii
National Association for the Education of Young Children
Washington, D.C.
1982

READING ASSIGNMENT

Reference #1: Read Part One pp. 3-39
Part Two pp. 39-119

References #2 & #3: Read as much of these two references as possible.

Write a 3-5 page response paper and include in folder.
Respond to other students' papers included in the folder if you wish.

FOLDER SIX
CONTENTS

1.
Cooperative Learning in Mathematics: A Handbook for Teachers
Neil Davidson, Editor
Addison-Wesley Publishing Company
Reading, Massachusetts
617-944-3700
1990

2.
Designing Groupwork: Stategies for the Heterogeneous Classroom
Elizabeth G. Cohen
Teachers College Press
1234 Amsterdam Avenue, New York, NY 10027
1986

READING ASSIGNMENT

Reference #1: Read Introduction and Overview pp. 1-21
Chapters 1, 2, 3, 4, 5, 6.

OR

Reference #2: Read in entirety.

Write a 3-5 page response paper and include in folder.
Respond to other students' papers included in the folder if you wish.

FOLDER SEVEN
CONTENTS

1.
Writing to Learn Mathematics: Strategies that Work
Joan Countryman
Heinemann Educational Books, Inc.
361 Hanover Street
Portsmouth, New Hampshire 03801-3959
1992

2.
Language in Mathematics
Edited by Jennie Bickmore-Brand
Heinemann Educational Books, Inc.
361 Hanover Street
Portsmouth, New Hampshire 03801-3959
1990

READING ASSIGNMENT

Reference #1: Read entire book.

Reference #2: Read selectively as time and interest permit

Write an article about your understanding of a mathematical topic, either new to you or old, and include in folder.
Respond to other students' papers included in the folder if you wish.

FOLDER EIGHT
CONTENTS

1.
Reshaping School Mathematics
Mathematical Sciences Education Board
National Research Council
National Academy Press
2101 Constitution Avenue, NW
Washington, DC 20418

2.
"Making Change in Schools"
Jeanette H. Gann
Arithmetic Teacher January 1993
Journal of The National Council of Teachers of Mathematics
1906 Associ. tion Drive
Reston, Virginia 22091
703-620-9840
FAX# 703-476-2970

3.
"Assessing Teachers' Development of a Constructivist
View of Mathematics Learning"
Deborah Schifter
A talk prepared for the NCTM Presentation
April 16, 1991 New Orleans

4.
Reconstructing Mathematics Education:
Stories of Teachers Meeting the Challenge of Reform
Deborah Schifter and Catherine Twomey Fosnot
Teachers College Press
1234 Amsterdam Avenue, New York, NY 10027
1993

READING ASSIGNMENT

References #1, #2, #3 and #4: Read all four references in their entirety.

Write a response paper and include in folder.
Respond to other students' papers included in the folder if you wish.

FOLDER NINE
CONTENTS

1.
Mathwise: Teaching Mathematical Thinking and Problem Solving
Arthur A. & Pamela R. Hyde
Heinemann Educational Books, Inc.
361 Hanover Street
Portsmouth, New Hampshire 03801-3959
1991

2.
How to Solve It
G. Polya
Princeton University Press
Princeton, New Jersey

READING ASSIGNMENT

Reference #1: Read Chapters 1 through 6.

Reference #2: This book is considered to be the bible of problem solving so it might be of interest to you to explore it and compare its contents with the Hyde book.

Select a problem or two from the those included in the folder and write up your solution with respect to the readings.

Comment on other students' problem solutions included in the folder if you wish.

FOLDER TEN
CONTENTS

1.
Computer Environments for Children
Cynthia Solomon
The MIT Press
Cambridge, Massachusetts
1986

2.
Children & Computers Together in the Early Childhood Classroom
Jane Ilene Davidson

Delmar Publishers, Inc.
Two Computer Drive West, Box 15-015
Albany, New York 12212
1989

3.
The Computer in Education A Critical Perspective
Edited by Douglas Sloan
Teachers College Press
1234 Amsterdam Avenue, New York, NY 10027
1985

READING ASSIGNMENT

Reference # 1: Read entire book.

References #2 & #3: Read according to your interest.

Write a response paper and include in folder.
Respond to other students' papers included in the folder as you may wish.

FOLDER ELEVEN
CONTENTS

1.
Enthnomathematics
Marcia Ascher
Brooks-Cole Publishing Company
Division of Wadsworth, Inc.
Belmont, CA 94002
1991

2.
Linguistic and Cultural Influence on Learning Mathematics
Edited by Rodney R. Cocking and Jose P. Mestre
Lawrence Eribaum Associates, Publishers
365 Broadway
Hillsdale, NJ 07642
1988

READING ASSIGNMENT

Reference #1:	Read introduction and Chapter 7. Select ONE of chapters 1 to 6 for careful reading. Read other chapters at your discretion.
Reference #2:	Read Chapter 2, introduction. It will help you to select which of the other chapters you might be interested in reading. Select TWO chapters for careful reading. Read other chapters as you time and interest.

Write a response paper and include in folder.
Respond to other students' paper included in the folder as you may wish.

SCHEDULE OF CLASS MEETINGS

January 19	A mathematics investigation
January 26	Games in the curriculum
February 2	Solving problems
February 9	Using computers in the math curriculum
February 16	Classroom video visits
February 23	Interviewing students
March 2	Mathematics algorithms
March 9	Another math investigation
	SPRING BREAK
March 30	Integrating math with a total school curriculum
April 6	Using computers in the math curriculum
April 13	A math story
April 20	Discussion of readings (Folder reading completed. Folder papers and all comments returned to individuals.)

April 27	Three member Group Presentations
May 4	Three member Group Presentations
May 11	Three member Group Presentations

BIBLIOGRAPHY

Ascher, Marcia ETHNOMATHEMATICS Belmont, CA: Brooks-Cole Publishing Company, 1991.

Atkinson, Sue: Editor MATHEMATICS WITH REASON Portsmouth,NH: Heinemann Educational Books, Inc., 1992.

Baker, Ann and Johnny MATHS IN THE MIND Portsmouth, NH: Heinemann Educational Books, Inc., 1991

Baratta-Lorton, Mary MATHEMATICS THEIR WAY. Reading, MA: Addison-Wesley, 1976.

Bickmore-Brand, Jennie WRITING TO LEARN MATHEMATICS: STRATEGIES THAT WORK Portsmouth, NH: Heinemann Educational Books, Inc., 1992.

Burns, Marilyn ABOUT TEACHING MATHEMATICS: A K-8 Resource Sausalito, CA: Marilyn Burns Education Associates, 1992.

THE MATH SOLUTION Teaching Mathematics through Problem Solving Sausalito, CA: Marilyn Burns Education Associates, 1984.

MATH AND LITERATURE (K-3) 1992.

Cocking, Rodney R. and Mestre, Jose P.: Editors LINGUISTIC AND CULTURAL INFLUENCES ON LEARNING OF MATHEMATICS Hillsdale, NJ: Lawrence Erlbaum Associates Publishers, 1988.

Cohen, Elizabeth G. DESIGNING GROUPWORK: Strategies for the Heterogeneous Classroom NewYork: Teachers College Press, 1986.

Countryman, Joan WRITING TO LEARN MATHEMATICS Portsmouth, NH: Heinemann Educational Books, Inc., 1992.

Cruikshank, Douglas. YOUNG CHILDREN LEARNING MATHEMATICS Boston: Allyn and Bacon, 1980.

Davidson, Jane Ilene CHILDREN AND COMPUTERS TOGETHER IN THE EARLY CHILDHOOD CLASSROOM Albany, NY: Delmar Publishers,Inc., 1989

Davidson, Neil, Editor COOPERATIVE LEARNING IN MATHEMATICS New York: Addison-Wesley Publishing Company,1990

Ginsburg, Herbert CHILDREN'S ARITHMETIC:THE LEARNING PROCESS. New York: D. VanNostrand, 1977.

Griffiths, Rachel and Clyne, Margaret BOOKS YOU CAN COUNT ON Portsmouth, NH: Heinemann Educational Books, Inc.,1988.

Hirsch, Elizabeth S. (ed.) THE BLOCK BOOK. Washington, D.C.: NAEYC, 1984.

Hughes, Martin CHILDREN AND NUMBER: DIFFICULTIES IN LEARNING MATHEMATICS. New York: Basil Blackwell Inc., 1986.

Hyde, Arthur A. and Pamela R. MATHWISE Teaching Mathematical Thinking and Problem Solving Portsmouth, NH: Heinemann Educational Books, Inc., 1991.

Kamii, Constance GROUP GAMES IN EARLY EDUCATION: IMPLICATIONS OF PIAGET'S THEORY. Washington, D.C.: NAEYC, 1980.

NUMBER IN PRESCHOOL AND KINDERGARTEN. Washington, D.C.: NAEYC, 1982.

YOUNG CHILDREN REINVENT ARITHMETIC. New York: Teachers College Press, 1985.

Kennedy, Leonard M. GUIDING CHILDREN TO MATHEMATICS DISCOVERY. Belmont, CA: Wadsworth Publishing Co., 1980.

Labinowicz, Ed. LEARNING FROM CHILDREN: NEW BEGINNINGS FOR TEACHING NUMERICAL THINKING. Reading, MA: Addison-Wesley, 1985

PIAGET PRIMER: THINKING, LEARNING, TEACHING. Reading, MA: Addison-Wesley, 1980.

Mason, John THINKING MATHEMATICALLY New York: Addison-Wesley Publishing Company,1985.

Mathematical Sciences Education Board: National Research Council RESHAPING SCHOOL MATHEMATICS Washington, DC: National Academy Press, 1990

Measuring UP: Prototypes for Mathematics Assessment Washington,DC: National Academy Press, 1993

National Council of Teachers of Mathematics: Washington, D.C. CURRICULUM AND EVALUATION STANDARDS FOR SCHOOL MATHEMATICS , 1989

MATHEMATICS ASSESSMENT 1991

THE AGENDA IN ACTION. 1983 YEARBOOK

PROBLEM SOLVING: 1980 YEARBOOK

Nelson, David, Gheverghese, Joseph and Williams, Julian MULTICULTURAL MATHEMATICS: Teaching Mathematics from a Global Perspective Oxford, England: Oxford University Press, 1993.

Nuffield Math Project. London, England: Nuffield Foundation, 1970.

CHECKING I AND II
THE FIRST THREE YEARS
BEGINNINGS
I DO AND I UNDERSTAND
PICTORIAL REPRESENTATION
COMPUTATION AND STRUCTURE: 2, 3 AND 4
PROBABILITY AND STATISTICS
PROBLEMS: RED, GREEN AND PURPLE
LOGIC
ENVIRONMENTAL GEOMETRY

Polya, G. HOW TO SOLVE IT: A NEW ASPECT OF MATHEMATICAL METHOD. Princeton, NJ: Princeton University Press, 1945

Richardson, Kathy. DEVELOPING NUMBER CONCEPTS USING UNIFIX CUBES. Reading, MA: Addison-Wesley, 1984.

Schifter, Deborah and Fosnot, Catherine Twomey RECONSTRUCTING MATHEMATICS EDUCATION: Stories Of Teachers Meeting The Challenge Of Reform New York, NY: Teachers College Press, 1993.

Sloan, Douglas THE COMPUTER IN EDUCATION: A Critical Perspective New York: Teachers College Press, 1985.

Solomon, Cynthia COMPUTER ENVIRONMENTS FOR CHILDREN Cambridge, MA: The MIT Press, 1986.

Stenmark, Jean Kerr ASSESSMENT ALTERNATIVES IN MATHEMATICS: An Overview of Assessment Techniques that Promote Learning Berkeley, CA: EQUALS and the California Mathematics Council. 1989.

MATHEMATICS ASSESSMENT Reston, VA: National Council of Teachers of Mathematics.

Stoessiger, Rex and Edmunds, Joy NATURAL LEARNING AND MATHEMATICS Portsmouth, NH: Heinemann Educational Books, Inc., 1992

Van De Walle, John A. ELEMENTARY SCHOOL MATHEMATICS: Teaching Developmentally, Longman Publishing Group {The Longman Building, 95 Church Street, White Plains, NY 10601-1566 (914) 993-5000} 1990.

Wallace, Edward C., Ed., LIBRARY LIST 1992, Association of Mathematics Teachers of New York State, 5 Elsmere Avenue, Delmar, NY 12054.

Whitin, David J. and Wilde, Sandra. READ ANY GOOD MATH LATELY? Portsmouth, NH: Heinemann Educational Books, Inc., 1992.

Williams, Elizabeth and Shuard, Hilary. PRIMARY MATHEMATICS TODAY. London, England: Longman, 1985. {See Van de Walle for address)

Zaslavsky, Claudia. AFRICA COUNTS. Chicago, IL:Chicago Review Press, 1990.

MULTICULTURAL MATHEMATICS: Interdisciplinary Cooperative-Learning Activities Portland, MA: J Weston Walch, 1993.

PREPARING YOUNG CHILDREN FOR MATH: A Book of Games. New York: Schocken Books, 1986.

Lucille Peterson, MS Hofstra University, teaches mathematics methods at Sarah Lawrence College, Bronxville, N.Y., where she is an adjunct instructor in the graduate Art of Teaching Program. She also teaches at Bank Street College of Education and has been an elementary and secondary classroom teacher and educational consultant in pre and inservice teacher education. She has helped to develop national mathematics reform forums for teachers through a joint, telecommunications project of Bank Street College of Education and the Center for Children and Technology at Educational Development Corporation. Recently she enjoyed the opportunity to work with teachers and students in mathematics education reform in Katmandu, Nepal.

Student Teaching/Senior Seminar

Eleven

SEMINAR / FIELD EXPERIENCE IN SECONDARY SCHOOL SOCIAL STUDIES

Lawson Bowling
Manhattanville College, Purchase, New York

INTRODUCTION

The Seminar is designed for student teachers who are experiencing a field placement. Formerly there were two semesters; as of Fall, 1993, however, this has been reduced to one. The main purpose of the seminar is the exchange of reports of actual "happenings" experienced while student teaching, so as to provide mutual support and to generate and share ideas relevant to the "real-life" situations faced by beginning teachers.

The Seminar is NOT a methods course; participants have already taken such a course. However, in accordance with guidelines provided by the Department of Teacher Education, guided discussions on certain themes relevant to today's education are a part of the course design.

The methods course at Manhattanville is presently taught by a highly competent, practicing teacher. Students will have had some exposure to educational technology as a possibility in the modern classroom in that course.

It is important to understand what the Seminar is and is not. Beginning student teachers do not want assignments piled on them when they are first actually trying to "do it." They are quick to point out that they have already had their methods course. Ideally, students are not taking any other courses during their field placement semester.

The Seminar is free-flowing to a large degree; immediate crises provide topics students want to talk about. However, especially by mid-semester, these topics usually exhaust themselves as "crises" become more a matter of accepted routine. This means that as the term goes along, more opportunities arise for treating topics.

Hence the placement of the issues of technology in the latter part of the course. By mid-October, students are past the initial shock of standing in front of the classroom and handling the first disciplinary crisis. They are more ready to focus on special topics.

Students are required to keep a reflective journal of their field experiences. They write with the awareness that only their supervisor will read the contents. As a first step toward considering the issue of technology, students will be required to keep this journal on a word-processor/computer. At the organizational meeting the topic of word processing as compared to conventional writing will be presented and considered. Due to the personal nature of the journal, however, students will not be required to edit it.

Anne Loemker, a former member of the Seminar, first organized a presentation on educational technology in the Spring of 1993, held at the Greenwich Academy, Greenwich, Conn., where she teaches social studies and mathematics while also serving as college counselor. The Seminar met in the media resource room there. Anne and a colleague from the Academy presented the technologies that the school possesses and discussed their pros and cons; there was also some opportunity for "hands-on" experimentation and questioning.

For the fall semester, the session prior to Anne's, dated October 7th on the syllabus, concerned the topic "Teaching Strategies." Here the technology question was introduced. First students were asked about their exposure to technology in the methods course. Second, copies of issues of *Electronic Learning* magazine were handed out, one per student. Students were asked to do two things: first, read the issue in preparation for its future use; second, put on their agenda finding out the "state of technology" at their cooperating school. The following week was Anne's session. The week after that, students reported on their findings in their districts, and also on at least one article in *Electronic Learning* they considered to be of general interest.

As would be predicted, students find the question of technology of interest. No one doubts that in the long run we are moving in that direction. At the present moment (fall, 1993), budget constraints dominate the districts students find themselves in--e.g., one district voted down its budget three times in 1993 resulting in a near-"austerity" operation of the school. Reports vary widely as to the state of technology.

Unlike two years ago, I find myself able to introduce the subject into the course, to speak with reasonable authority on it, to present, thanks to Anne Loemker (who worked on her presentation as a project for the Seminar), some actual uses of it at one school, to acquaint students via *Electronic Learning* with the issues and practice in a broader setting, and, finally, thanks to the mailings I receive from the Westchester Alliance for Learning Technologies, courtesy of the Westchester Education Coalition, I am able to connect interested students with others so inclined. All of this amounts to a substantial improvement of the content of the Seminar.

COURSE SYLLABUS

Readings:

J.C. Robinson & E. H. Rotter, *Parent-Teacher Conferencing* (Washington, 1986).

F.X. Walton, *Winning Children Over* (Chicago, 1978).

Electronic Learning magazine (provided by instructor).

Requirements:

1. Attendance
2. Participation.
3. Readings.
4. Journal **kept on a word processor/computer.**

Schedule:

Sept. 9	Introduction Educational Philosophy
Sept. 16	Lesson & Unit Planning Field Report: First-year, High School Bob Kasmire '92C, John F. Kennedy H.S., Somers, N.Y.
Sept. 23	"Classroom Management"
Sept. 30	"Classroom Management" continued Field Report: First-year, Middle School Jeff Knisely '92MAT, Greenwich Academy, Greenwich, Conn.
Oct. 7	Teaching Strategies
Oct. 14	Technology in the Classroom Ann Loemker '93MAT, Greenwich Academy, Greenwich, Conn.
Oct. 21	Large Group Seminar: NYS "Compact for Learning"

Oct. 28	Technology in the Classroom continued Record Keeping
Nov. 4	Communications: Home & School Grading
Nov. 11	Professional Development
Nov. 18	Special Students
Nov. 25	THANKSGIVING
Dec. 2	Resources Beyond the Classroom
Dec. 10	Where We Are, & Where Are We Going?

Lawson Bowling, teaches history at Manhattanville College, Purchase, N.Y., where he is chairman of the History Department. A native of Abington, Penna., he earned degrees in English, history, and education from Emory, Columbia, and the University of Pennsylvania. From 1977-80 he taught social studies at Forest Park (Ga.) Comprehensive Senior High School, Forest Park, Ga. At the college level he has also taught at Vassar, Columbia, Barnard, and the University of Connecticut. He also serves as Field Supervisor for social studies for the Department of Teacher Education at Manhattanville.

Other/Specialized Courses

Twelve

INTERACTIVE LEARNING TECHNOLOGIES: PRESERVICE

Wayne D. Gray
Fordham University, Tarrytown and NYC, New York

INTRODUCTION

The *Center for Cognitive Technologies* is devoted to the application of cognitive theory to education and training. The Center, which located on the 10th floor at Lincoln Center, maintains a networked array of Macintosh and PC computers complete with CD-ROM, videodisks, scanners, audio-digitizing equipment, VCRs, video-digitizing equipment, laser printers, as well as telecommunications capabilities. The Center's resources are devoted to three main areas. **Tools for Teachers** educates classroom teachers in the effective application of cognitive theory to technology to achieve educational objectives. **Silicon into Textbooks** teaches Masters and PhD students to design and develop interactive learning systems. Instructional effectiveness and usability (human-computer interaction isssues) are equally stressed. **Advancing Cognitive Technologies** stresses research that increases either the instructional effectiveness or usability of multimedia systems.

COURSE SYLLABUS

Course Description & Goals:

The course goals include: developing an understanding of cognitive technologies as tools for reflective practitioners; and evaluating educational software using multiple, appropriate criteria. Open only to matriculated students in one of Fordham's preservice teacher preparation programs.

Textbook

Mathies, B. K., Pogue, L. H., & Schneider, J. C. (1991). *Teaching with computers: Yes you can!.* Dubuque, IA: Kendall/Hunt Publishing Co.

Reserved Readings

Four copies of these are on reserve in the Lowenstein Library:

Collins, A. (1988). Cognitive apprenticeship and instructional technology (Report No. 6899). Cambridge, MA: BBN Systems & Technologies Corporation.

Collins, A. (Sept. 1991). The role of computer technology in restructuring schools. *Phi Delta Kappan*, 28-36.

MECC. (1991). *Wagon Train 1848: Instructor's Manual.* Minneapolis, MN: MECC. New York Times (January 4, 1992). *Trouble in SimCity* (editorial).

Schofield, J. W., Evans-Rhodes, D., & Huber, B. R. (In press). Artificial intelligence in the classroom: The impact of a computer-based tutor on teachers and students. *Social Science Computer Review.*

Soloway, E. (February 1991). Quick, where do the computers go? *Communications of the ACM,* 34(2), 29-33.

Soloway, E. (September 1991). How the Nintendo generation learns. *Communications of the ACM,* 34(9), 23-26, 95.

& additional readings as assigned.

Session 1: Introduction to Cognitive Technologies

Section 1: January 22 @ 12-2:15 PM
Section 2: January 22 @ 9-11:15 AM
Topics: Why Cognitive Technologies? Why not just computers?
Overview of Course, possible videotape
Assignments for session 2:
Read MPS, pp4-14 & 19-42.
Read both Soloway papers.
Write: Turn in a statement, question, and summary paragraph on each (half page on each, not to exceed one page total). This is a checkmark assignment (see below) and worth 5% towards your grade in this course.
Practice with the Macintosh. Go to Mac room in basement. Use a program such as MacPaint, or MacDraw, or HyperCard.

Session 2: Hands on with mice, CD-ROM, scanners, and digital audio.

Section 1: January 29 @ 12-2:15 PM
Section 2: January 29 @ 9-11:15 AM
Due Today: Soloway Summary. 5%. A checkmark assignment.
Topics: Chaos may briefly reign as we break up into small groups and take turns playing with CD-ROM encyclopedias, scanning in pictures (bring something interesting to class), digitizing our voices, and generally using the full-array of modern, multimedia equipment. Meet in 1022 and we will go on from there.
Assignments for session 3:
Read Collins, A. (1988). Cognitive apprenticeship and instructional technology (Report No. 6899). Cambridge, MA: BBN Systems & Technologies Corporation. Note that there are TWO Collins papers, be sure to read the right one!!
Write: For each of Collins' six factors turn in a short paragraph and question. This is a checkmark assignment that should not exceed two pages. It counts 10% towards your grade for this course.

Session 3: Cognitive Apprenticeships & Evaluation of Software.

Section 1: February 12 @ 12-2:15 PM
Section 2: February 5 @ 9-11:15 AM
Due Today: Summary of Collins' Cognitive Apprenticeship paper. 10%. A checkmark assignment.

Topics: Lecture and discussion of Collins' notion of Cognitive Apprenticeship. Discussion of the use of Collins' factors and other consideration in evaluating educational software. Demo of videodisk technology.

Assignments for session 4:

Read MPS, Types of Software, pp43-44; Evaluation of Software, pp45-50.Read Schofield paper.
Write a two page summary of it. Be sure to emphasize her main points. Checkmark assignment, 10%.Review MECC. (1991). Wagon Train 1848: Instructor's Manual. Minneapolis, MN: MECC in preparation for next week's activity.

Session 4: Using Technology to Facilitate Cooperative Learning

Section 1: February 26 @ 12-2:15 PM
Section 2: February 26 @ 9-11:15 AM
Due Today: Schofield paper. 10%. Checkmark.
Topics: Westward Ho! This session we will again cram ourselves into the Center this time for the purpose of evaluating a piece of educational software. The software in question, Wagon Train, claims to promote cooperative learning, does it?

Assignments for session 5:

Evaluate Wagon Train 1848. Use the form provided in MPS plus the Collins 6+ form. 15% towards your grade, our first graded assignment.
Read the second Collins paper (in Kappan, Sept. 1991).
Write a two-page discussion of this paper. What are your thoughts? Do you agree with Collins? Why? Why not? 10% checkmark.
Read MPS, pp79-111.

Session 5: Simulations and other Technology-based tools.

Section 1: March 5 @ 12-2:15 PM
Section 2: March 12 @ 9-11:15 AM
Due Today: Wagon Train 1848 evaluation: 15%, graded.
Review of Collins' second paper: 10%, checkmark.
Topics: We break into subgroups again to learn about and use several powerful types of educational technology. SimAnt¬, SimCity¬, and SimEarth¬ will be available for us to learn and experience.

Assignments for session 6:

Evaluate one of the simulation programs (evaluation #2). Use the form provided in MPS plus the Collins 6+ form. 15% towards your grade, a graded

assignment.
Evaluate a piece of educational software available to your school (evaluation #3). If you have none available then make arrangements to use the Center for Cognitive Technologies and evaluate one of ours. 15%, a graded assignment. As above, use the form provide in MPS plus the Collins 6+ form.
Read MPS, Lesson Plans, pp115-134; Ethics & Issues, pp141-147; Telecommunications, pp149-152.

Session 6: Tuesday Class!! Telecommunications: Bringing the World into the Classroom.

Section 1: April 13 @ 10:45-12:15 PM
Section 2: April 13 @ 1:30-3:00
Due Today: Evaluation #2, 15%, graded.
Evaluation #3, 15%, graded.
Topics: Videotape of a video conference presented by the PBS Elementary/Secondary Service with the National School Boards Association's Institute for the Transfer of Technology to Education. Conference took place October 22, 1992. The video conference examines issues of telecommunications use in schools from a variety of perspectives -- from policy maker to practitioner. The 1992 NFIE Christa McAuliffe Educators will demonstrate projects currently in place in their respective districts.
Assignments for session 7:
Your last evaluation!!! Evaluate a piece of educational software available to your school (evaluation #4). If you have none available then make arrangements to use the Center for Cognitive Technologies and evaluate one of ours. 15%, a graded assignment. As above, use the form provide in MPS plus the Collins 6+ form.

Session 7: Monday Class!!!: Topic Open.

Section 1: May 10 @ 9-2?
Section 2: May 10 @ 9-2?
Due Today: Evaluation #4, 15%, graded.
Topics: Technology in your school. Equipment, software, access, attitudes.
Evaluation (grades).

5% Soloway summary (due Session 2) checkmark*
10% Collins' Cognitive apprenticeship summary (due Session 3). checkmark.
10% Schofield. checkmark. (due Session 4).
15% Ed Software Evaluation #1: Wagon Train, 1848. Graded. (due Session 5).

10% Collins' restructuring paper in Kappan. checkmark (due Session 5).
15% Evaluation #2, graded (due Session 6).
15% Evaluation #3, graded (due Session 6).
15% Evaluation #4, graded (due Session 7).
5% Class participation.Late assignments: Unless prior arrangements are made with the instructor, 10% will be deducted from each late assignment and up to 100% will be deducted from very late ones.

*Note: A checkmark assignment is one for which you will receive either full credit or no credit (or full credit minus the above mentioned late penalty). Checkmark assignments are checked for adequacy ("C" or better). They are not graded for excellence.

Wayne D. Gray, Ph.D., is an Associate Professor at Fordham University. His research interests include the design of interactive learning environments, cognitive modeling, end-user programming, and the cognitive characteristics of a good example. He received his Ph.D. in Cognitive Psychology from the University of California at Berkeley. In 1980 he began work for the Training Research Laboratory of the U. S. Army Research Institute where in 1985 he won an Army Science Conference award for his research into the novice-to-expert transition in skilled performance. In 1986 he received both a Sloan Foundation Fellowship and the Secretary of the Army's Science and Engineering Fellowship to spend a year with the ACT* Tutoring Project at Carnegie Mellon University. In 1988 he joined the Artificial Intelligence Laboratory of the NYNEX Science & Technology Center (White Plains) where he combined computer and cognitive science for purposes of training and systems design. Wayne joined Fordham in September of 1991. At Fordham he is beginning to turn his research interests to applications of computer and cognitive technologies for teacher training. He is currently combining his interest in end-user programming with that of teacher-created multimedia technologies.

Thirteen

EDUCATIONAL ASSESSMENT OF THE SPECIAL CHILD

Claire Lavin
College of New Rochelle, New Rochelle, New York

INTRODUCTION

Course Description

Educational Assessment is a required course in the CNR graduate programs in special education, community school psychology, and guidance. All students have completed a basic course in Tests and Measurements prior to admission into this course. Now they are given an opportunity to apply that knowledge in the process of actually assessing a client. Students outcomes include knowledge of techniques of educational assessment, skill in applying formal and informal assessment techniques, the ability to communicate assessment results in written reports and exit interviews, and ultimate the ability to use the process of assessment to perform an educational evaluation of a client.

Problems with the Course

Clients are referred to the course for assessment from a variety of sources. Generally they range in age from five to forty five. Their functioning ranges from retarded, severely language impaired to the gifted. The clients and/or their parents have been referred to obtain information ranging from vocational choices to instructional approach in regular and special settings. Areas of specific interest range from reading through perceptual motor functioning.

Given this diversity, the choice of available assessment instruments is wide. Students must be aware of the variety of tests available, and select those most appropriate for the client and type of information needed for the assessment report.

The course instructs students in the assessment process, giving them questions that guide their selection of instruments. They proceed through the process evaluating broad areas such as achievement first, and then specific skills such as reading comprehension based on the data gained from the prior test.

Class size is limited to 16 and a course assistant is provided. Students have, as indicated above, completed a basic course in testing. However, even with this background and their textbooks, they have difficulty identifying and then selecting appropriate tests.

Prior to the technology grant, students were necessarily very dependent on the instructors for help in this process. The technology was used to make them more independent, and to help them internalize the assessment process.

Solution

A wide variety of tests were available in the Education Center for the students use. To help them select the most appropriate test, a toolbook computer program. Instrument File, was developed based on the assessment model taught in the course. The Instrument File includes tests in all of the areas covered by the assessment (see outline). For each area, the Instrument File requires that the student ask him/herself questions regarding the type of test needed. After a category is selected, the Instrument File then displays a description of the test to help the student decide whether or not to use it.

To illustrate the process, in the area of Reading, the Instrument File lists on the screen

Reading Comprehension
Decoding Skills
Comprehension and Decoding.

The student must then ask him/herself what it is he/she needs to know. Upon deciding, he/she clicks on the appropr ate button and the program displays specific tests in that area. There is also an index at the back to allow the students to quickly check a particular test.

Now when the students conference with instructors to verify the tests they intend to give, they can articulate the process they used in making the selection and also identify the particular test that is most appropriate.

Follow Up

The Instrument File program has been modified for use as a catalogue guide in the Educational Center. Students from all of the graduate courses will be able to walk in to the center, select a test category, and go throughout the program to select the list that best fits their needs.

COURSE SYLLABUS

I. Course Objectives:

The course will explore various techniques of educational assessment. Students will choose and apply appropriate formal and informal assessment techniques to evaluate a client. From the data obtained, students will write diagnostic reports describing educational strengths and weaknesses, and will communicate their findings to parents and professionals.

II. Course Requirements:

		Grade Weight
A.	To prepare a Case Study of the client based upon review of referral data and parent interview.	10%
B.	To interview the client and summarize findings in a Client Interview Report.	10%
C.	To competently apply informal and formal assessment techniques.	20%
D.	To write assessment reports for School and Parent.	40%
E.	To communicate test findings in a parent conference.	10%
F.	To complete a final exam.	10%

III. Clinic Procedures:

A. Two students will be assigned to each client. Students will work jointly. Case study, Client Interview,and final Parent Report and School Reports will be cooperative ventures by pairs of students.

B. Each pair of students will receive the name, address and phone number of the client they will assess in the clinic.

C. Students will contact parents to arrange for parent and child interviews at the first clinic session.

D. Students wishing information from schools or referral agencies must obtain a signed release form from parents. Forms are available from instructor or assistant.

E. The assessment battery will be administered during the clinic section of the course.

F. Each test administration will be typed and submitted immediately after the testing session. Follow format distributed.

G. Report formats, and clinic requirements must be carefully followed. If in doubt about any of the above, contact Dr. Lavin or the course assistant.

H. All absences from testing sessions must be reported to Dr.Lavin, the Education Center, and your partner prior to the testing session.

I. After completion of the assessment, students will discuss findings with parents.
   1. The instructor or assistant will attend the final parent conference.
   2. Parents must sign a release form if they agree to have a copy of the final school report sent to an outside agency.

J. By the end of the term,students will submit for the child's folder:
   1. Client Interview (one copy)
   2. Case History (one Copy)
   3. Final School Report (triplicate)
   4. Final Parent Report (triplicate)

K. All cases discussed in class and all assessment data are confidential information and may not be shared with any person or institution without the written permission of the client, parents, and instructor.

ALL REPORTS AND TEST DATA MUST BE PLACED IN CLIENT'S FOLDER AT THE CONCLUSION OF THE COURSE.

IV. Standards for Written Work

All reports must be typewritten. Reports that are not grammatically correct will not be graded.

STUDENTS ARE REQUIRED TO WRITE THEIR FINAL SCHOOL AND PARENT REPORTS ON THE COMPUTER, AND BRING THE DISK WITH THEM TO THEIR INDIVIDUAL CONFERENCE WITH THE INSTRUCTOR, AND WHEN SUBMITTING REVISIONS. THIS WILL FACILITATE CORRECTING THE REPORTS IN A TIMELY MANNER PRIOR TO FINAL PARENT CONFERENCES. THE SERVICES OF THE CNR COMPUTER CENTER ARE AVAILABLE TO YOU AT NO COST. AN INTRODUCTORY SESSION WILL BE ARRANGED FOR STUDENTS UNFAMILIAR WITH COMPUTERS.

V. Test Battery:

The test battery will generally include 6-7 of the tests listed below, depending on the age and nature of the client's problems. There should be at least one test selected from each of the categories listed below.

A. Screening Tests of Intelligence

Slosson Intelligence Scale -R (SIT-R)
Kaufman Brief Intelligence Test (K-BIT)
Woodcock Johnson Psycho Educational Battery R- Cognitive(WJR)
Test of Non Verbal Intelligence-R (TONI-R)

B. Tests of Achievement

Wide Range Achievement Test-R (WRAT)
Peabody Individual Achievement Test-R (PIAT-R)
Kaufman Tests of Educational Attainment (KTEA)
Woodcock Johnson Psycho Educational Battery-R Achievement(WJR)

C. Diagnostic Tests of Achievement

Gates McKillop Horowitz Reading Diagnostic Tests
Key Math Test-R
Sequential Assessment of Mathematics (SAMI)
Test of Reading Comprehension (TORC)
Woodcock Reading Test-R (WRM-R)
Roswell-Chall Reading Test

D. Tests of Visual/Motor Function

Bender Visual Motor Gestalt Test
Beery Buktenica Visual Motor Integration Test-R

E. Tests of Language

Peabody Picture Vocabulary Test -R (PPVT-R)
Test of Language Development (TOLD)
Test of Adolescent Language (TOAL)
Test of Written Language (TOWL)
Comprehensive Evaluation of Language Functioning(CELF-R)

F. Tests of Learning Styles and Readiness

Detroit Test of Learning Aptitude-Revised
Slingerland: Pre-reading,forms A,B,C,D and Malcomesius
Metropolitan Readiness Test
Boehn Test of Basic Concepts -R

G. Miscellaneous Tests

Harris Test of Lateral Dominance
Wepman Test of Auditory Discrimination
Goodenough-Harris Draw a Man

VI. Selecting a Test Battery:

In selecting an appropriate test battery, students must consult their textbook for information regarding appropriate tests for their client.

Students must also consult the INSTRUMENT FILE computer program installed on the IBM computer in the model classroom. This file lists all of the categories of tests covered in this class. Each category is subdivided to indicate the content and type of skills evaluated. This program will help you identify appropriate tests for your client.

After choosing a test battery, students must consult with the instructor prior to making a final test selection

VII. Test Reports

After each test is administered, an individual test report must be typewritten and submitted the week following the test administration. Copies of the required format will be provided by the instructor.

Computer scoring programs are installed on the IBM computer in the model classroom for the following tests:

PIAT-R-R
WJR Cognitive and Achievement
WRMR

Program manuals are available in the Education Center.

Individual conferences to discuss test evaluations will be scheduled. Conferences will be held with pairs of students to review drafts of final reports and prepare for parent conferences.

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Fourteen

TECHNOLOGY IN ELEMENTARY AND SPECIAL EDUCATION

Robert D. Postman
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INTRODUCTION

Overview

The answer is apparent before the question is asked. Yes! Teachers will have to be ready to help their students prepare for a technological age. The college should offer a course in technology for prospective teachers.

Other questions such as "What will this technology be?" and "How should the course be structured?" are more difficult to answer. This Introduction considers and answers these two questions to develop a foundation for this course revision.

What will the technology be?

Technology can be considered in the two categories. There is technology in daily life or the workplace, that is, the technology that students will use in the 21st century. There is also technology which promotes learning, that is, the technology which teachers will use to help students learn. An effective course will consider both categories of technology.

Technology in Daily Life and the Workplace. The technology students use will be most like the multimedia technology of today. A user will interact with all information and entertainment resources through the computer. Other services such as banking, shopping and education will also be available. Speech, sound, text, still and live pictures, movement and animation will all be will be available through the computer.

It is also likely that users will present information using this multimedia/interactive approach. Papers, presentations, reports and other communication will not be limited to the printed word. Rather these reports will also include speech, sound, text, pictures, movement and animation. Multimedia "production" will be as widespread as word processing is today.

All this information will be instantly available to users through modems, satellite transmissions, television or phone lines. Computers will continue to store and "run" some programs and applications programs will be used to organize and store information.

Using technology will be as familiar as watching television, using a phone or driving a car. Technology, for most people, will not mean writing programs or a familiarity with the way computers work. This specialized work will be reserved for technicians and mechanics.

Technology of Instruction. Instructional technology today is a mix of appealing instructional programs, some simulations and a few programs which feature interactive multimedia. The number of interactive multimedia programs will increase.

We are persuaded that LOGO is a useful program for young students and learning disabled students. LOGO shows students that they can control the computer and make it do what they want. They just have to be careful how they talk to their computer. This is good advice for every budding technological genius.

There are sophisticated instructional devices and programs for hearing impaired, blind, learning disabled and physically handicapped students. These materials can help students gain access to the computer and also help students overcome their disabilities.

How should the course be structured?

The brief discussion above leads to the topics noted below. These topics guided the revision of Technology in Elementary and Special Education.

This course should introduce students to interactive, multimedia technology and show them how to integrate speech, sound, text, still and live pictures, movement and animation. The course should also show students how to use word processors and application programs. The course will also introduce students to modems and other forms of data transmission.

The most effective instructional programs will be highlighted along with a thorough grounding in LOGO. Students will also be shown how to use the range of hardware and software available for use with special education students.

Students will be active participants in the course. Student assessment will be based primarily on the portfolio of work completed for the course.

COURSE SYLLABUS

Student's Overview

In this course you will learn how to use computers and technology in education. You will learn why technology is so important for today's students.

You will learn to develop a multimedia presentation. You will be exposed to multimedia and CD ROMs in education including Groliers Encyclopedia Microsoft Bookshelf and other multimedia packages.

You will learn how to use Logowriter and write Logowriter procedures. You will also learn how to use various instructional programs for teaching the school subjects to elementary and special education students.

In addition, you will learn about an integrated software which includes database, spread sheet and word processing programs. You will be exposed to the way technology can be used to help students with various handicapping conditions.

Environment

This class is designed to be conducted in a computer laboratory. There should be a computer for each pair of students. There should also be sufficient numbers of MPC compatible CD ROM drives and sound cards.

Unit I. Introduction

In this unit students become familiar with computers.

Meet the Computer

Students carry on a mock conversation with a computer. They tell the computer how they feel about computers and what they think computers can do.

Introduction to Computers

Students learn what a microcomputer is. They also learn about the other things (keyboard, disk drives, memory, display etc.) which make it possible and pleasing to operate the computer. They also learn about other devices including sound cards and CD ROM players and peripheral devices including printers, modems, and scanners.

Students will learn about how computers developed from fingers to modern times.

Students will also have an overview of current and potential uses of the computer.

Course Overview

The objectives of the class and class structure and expectations are also reviewed with students.

Unit II. Introduction to Multimedia

In this unit students will learn how to use existing multimedia software. The multimedia software reviewed will be similar to those mentioned below.

- Groliers Multimedia Encyclopedia or another current multimedia encyclopedia
- Microsoft Bookshelf
- Sherlock Holmes Consulting Detective
- Nautilus - a CD ROM periodical

Following the overview, each student will have an opportunity to use each piece of software. The software will be available through the library for students to use for the remainder of the term.

Unit III. Introduction to Multimedia Authoring Software

In this unit, students will be introduced to the authoring program ACTION.

The unit begins with a demonstration of a brief presentation created with the ACTION software package. ACTION is used to produce multimedia presentations which include drawings, pictures, color, sound, movement and animation.

ACTION

Students are shown how to use the drawing and importing capabilities of action. They are also shown how to use the scene and time line features of ACTION along with the save, play and play presentation commands.

Next, the instructor leads a class discussion to determine a theme for a one minute sample presentation. Once a theme has been chosen, students are partitioned into two or three groups. Each group plans a different scene in the presentation.

The plan for each scene is discussed with the instructor. In turn, the instructor explains how each plan could be presented using ACTION The explanation is followed by a demonstration of exactly how to produce their scene with ACTION.

Unit IV. Using Multimedia Authoring Software

This unit begins with a continuation of the class project. Each scene is produced with ACTION. The completed presentation is played for the class. Students note those parts of the presentation which could be improved.

The notes are discussed by the class and a consensus is reached for editing the presentation. The instructor demonstrates how to use ACTION to make the changes recommended by the class.

During the last half hour of this unit the presentation is shown continuously by the students in a public place such as the cafeteria. Students "buttonhole" others and bring them over to explain the presentation. Each student describes how the presentation was produced to at least one other person.

Unit V. Introduction to Team Presentations

Each student in the class participates on a team which produces a presentation. The presentations are 1 - 2 minutes long and convey a particular message, idea, theme, subject or concept. All presentations incorporate sound, voice, color, images, movement and text.

The class is the partitioned into teams of two. If there are an odd number of students in the class, one team will include three people.

Each team makes a preliminary decision on the topic or theme for their presentation. These topics are discussed with the class and final topics are determined. The instructor spends the remainder of the class helping students plan and begin the production of their multimedia presentations.

Students work on these projects throughout the term. One class in the eleventh or twelfth week of the term is set aside to help students finalize these presentations. Final presentations are shown during the next to last class session.

Unit VI. LOGO

Students will be introduced to LOGO and write a LOGO procedure.

I'm a Turtle

The unit begins with students playing the role of turtles. The move about in response to the commands left, right, forward, back and then North, South, East and West. First the instructor and then students take turns issuing these commands.

Introduction to LOGO

Students are shown how to load LOGO and are introduced to the commands Left, Right. Forward and Back. Next students are given a series of mazes on screen overlays. They negotiate the turtle through these mazes using the commands.

Next, students are introduced to the following LOGO commands and practice using these commands on their computers.

Setheading (Seth)	Stamp
Setcolor (Setc)	Fill
Setbackground (Setbg)	Label
Setshape (Setsh)	Shade
Setposition (Setpos)	Tell

Writing LOGO Procedures

Students are shown how to combine these commands to write LOGO procedures. Each students practices writing procedures in class.

Each student will write a brief LOGO procedure which uses all the LOGO commands discussed in class. This procedure will be handed in on a diskette at the conclusion of the class.

UNIT VII. Communications and Computers

In this unit, students will become familiar with modems, communications and bulletin boards.

Students will be shown how modems and communications software operate. Each student will have an opportunity to use a bulletin board such as Compuserve or Prodigy.

UNIT VIII. Using Word Processors, Spreadsheets and Database Management Programs

In this unit, students will become familiar word processors, spreadsheets and data base

management programs.

Students will demonstrate mastery of the following functions:

Word Processors

Typing	Print
Save	Spell Check
Open	Thesaurus
Block move and copy	Grammar
Search and Replace	Document Format

Students should be familiar with the following functions:

Spread Sheet
- Entering Data in Cells
- Finding the sum and Average of entered data
- Graphing Data with point, line and circle graphs

Data Base
- Forming Fields
- Entering Data in Fields
- Sorting and ordering records

UNIT IX. Instructional Software

In this unit, students review, use and evaluate the most popular instructional programs

An ever growing number of computer programs exist for teaching arithmetic, reading, science, language arts, social studies and other school subjects to elementary and special education pupils. Current programs include: Where in the World is Carmen, San Diego, Where in Time is Carmen San Diego, The Oregon Trail, Alge Blaster, Reader Rabbit, Writer Rabbit, Sticky Bear Math and others. Other more sophisticated instructional programs including the CCC software series are also available.

The instructor will supervise students as they use and evaluate at least seven of these instructional programs.

UNIT X. Technology and Special Education Students

In this unit students become familiar with the ways technology can aid exceptional

children.

There are a number of specially designed hardware devices to help students gain access to computers. These devices include speech synthesizers, speech recognition, special keyboards, special display screens and printing devices and a wide variety of switches and scanning devices.

Another selection of computer software and related hardware helps students with their disabilities. This hardware includes computers which evaluate the speech patterns of deaf students, voice communication devices for blind students, special drill and practice programs for learning disabled students, speech boards for cerebral palsy students, and computer controlled wheel chairs for those who are physically challenged.

Students will be familiar with all these devices and be able to describe how they can be used effectively in a school setting.

COURSE EXPECTATIONS

Attend and participate in all class sessions

Complete computer projects
- Team Multimedia Presentation
- LOGO Procedure

Examination
- Discussed in Class

Demonstration Quiz

You will be asked once or twice to demonstrate what you have learned in a class at the end of a class session. These quizzes will be unannounced.

Grade Computation

Class Participation	15%
Demonstration Quizzes	15%
Team Presentation	20%
LOGO Procedure	15%
Examination	35%

COURSE CALENDAR

January
27 Course Overview
Introduction to Computers

February
3 Introduction to Multimedia/Multimedia Software
10 Using Authoring Software
17 Using Authoring Software
24 Introduction to Team Presentations

March
3 LOGO
10 LOGO
17 Communication and Computers
24 Team Presentation Laboratory Session
31 NO CLASS

April
7 Word Processing, Spreadsheets and Database Management
14 Word Processing, Spreadsheets and Database Management
(Preliminary LOGO Disk)
21 Instructional Software
28 Instructional Software/Technology and Special Education

May
5 Technology and Special Education
12 Team Presentations/Logo Disks/Final Examination Review
19 Examination/ Fix Time for LOGO disks and Team Presentations

Due Dates

Preliminary Team Presentation	March 24
Preliminary LOGO Disk	April 14
Final Team Presentation	May 12
Final LOGO Disk	May 12
Examination	May 19

Fix Time on May 19 is to make corrections in the Team Presentation or the LOGO procedure. You may not begin any new work.

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School-Based Projects

Fifteen

SCHOOL STORE PROJECT

Barbara Marchewka
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INTRODUCTION

Three years ago my colleague, Jeri Waldman, and I decided to enhance and enrich the fourth grade curriculum by adding a "real life" component. After much research and discussion, we decided to work with our students to start and run a school store. Our primary purpose was not to make a lot of money. Rather, it was to have the students apply their school learning and to have opportunities to experience decision-making first-hand. Additionally, the store would enable our students to see the value of quantitative reasoning and mathematical applications in a real work environment. Finally, it would give them the opportunity to create instruments that would help us all to measure the success of the store as a business. Eventually, technology became an integral part of all facets of this project.

PROJECT OVERVIEW

I. GETTING STARTED

- Discuss intital funding options and raise capital (selling stock, fund raiser, etc.)
- Children and teachers create "job" list (including management structure), company name
- Conduct market research, select products and pricing
- Choose school store location and obtain administration approvals

II. CREATING A BUSINESS PLAN

- Develop advertising (poster and broadcast)
- Design financial/capital recording keeping
- Develop store sales forms, sales/cashiers procedures, salestraining

III. OPERATING THE STORE

- Order Merchandise
- Design store display case
- Conduct sales/cashier training
- School store simulation (selling techniques. making change, record keeping)
- Set school hours/sales schedule and open store

IV. MONITORING THE BUSINESS

- Set up weekly management/staff meetings
- Develop monthly/annual budget
- Maintain accurate financial records
- Review financial results
- Reorder merchandise
- Plan new advertising strategies (include new product introductions)
- Assess sales, store operation, etc. and refine business

V. YEAR END PROCEDURE

- Year end store sale (reduce inventory level)
- Write annual report
- Buy back store stock (if appropriate)
- Hold year-end business conference

TECHNOLOGY'S ROLE:

After two years of experience with the store, Jeri and I realized that a necessary component to the school store operation was missing. Hand-tallied and written sales/profit records, reports and budgets, all created by our students, were getting more and more time-consuming, were often inaccurate, and worst of all, left little time for analysis. It was this analysis, we speculated, that would help our students grow cognitively, and would help them actively learn to improve their business. We decided that a computer would be a useful tool in helping us track our sales, pricing, profit, budget, inventory, stock offering, and, of course, aid with correpondence and publicity.

This brief article is an attempt to describe that undertaking and suggests technology's role in assisting students construct their learning around economics and business decision-making. Another important component, not completely discussed here, is the actual setting-up of the school store business. As one might guess, a preparation time of three to four

months was involved. This included student activities that helped our students understand basic economic principles, market research, and store operation stimulations -- all of which were necessary to open and operate a successful school store.

SOFTWARE AND HARDWARE:

To computerize our business, we used an IBM compatible computer with "Windows" and "Microsoft Works," an integrated package which contains a word processor, a spreadsheet, and a database program. Fortunately for us, I received this "technological windfall" through my work with the Westchester Teacher Education Group. Jeri and I used what was available to us as well as what was as simple as possible for our students, particularly those in the finance management group.

ENABLING TECHNOLOGIES AND PROCESSES:

The students on the finance team helped define the business' financial needs. They identified the following reports to be developed: inventory list, store sales and manager forms, budget statement, monthly/annual sales report, and profit/loss report. Using small cooperative groups, students and their teacher-facilitator, began to brainstorm as to what was important to know and record. They also looked at previous year's reports and order invoices. This was done by 8-10 students who comprised the "finance team." These were students who generally felt comfortable with math. It also included the finance secretaries, because they had a secure comfort level using the computer.

Teaching students about a spreadsheet and its features is a methodical process. The students will have varying degrees of computer literacy. Most will not have experienced a spreadsheet program. We started by learning how to retrieve and save a file in the Windows environment. We did not go into detail about Windows until we saved a single file numerous times under many different names and were forced to find out what we had done. Also, we only investigated what was necessary to fix our problems or create our reports.

Basically, teachers and students together, learned certain features of the software (a) in order to satisfy the finances team's listed needs and (b) according to the increasing complexity of the task. The learning almost always sprung out of the students' suggestions of what they wanted to know or record.

The spreadsheet introduction and instruction was hands-on. In the very beginning, I sat in front of the computer and demonstrated certain features, but then they all took turns in every lesson. This worked out well because the order of learning new things on the computer was always prompted by the very things students wanted to be able to do on/with it! We

explored the more complex tasks and capabilities of the spreadsheet program as students became more adept with the program's basic input features.

The students always worked in a small group and mastered three different levels of the program at their own pace: LEVEL ONE -- inputting and formatting functions; LEVEL TWO -- basic spreadsheet database concepts; and LEVEL THREE -- mathematical formula capabilities. Together, students and teachers investigated the spreadsheet capabilities/features in the following order: (1) column/title formatting functions, including tool bar; (2) data entry procedures; (3) dollar and percent formatting; (4) database features/alphabetizing columns; and (5) mathematical formula creation, including column totaling. We did not have the opportunity to explore graphing and other components, but hope to make that possible with the next group of students.

As expected, most of the students had no prior experience working with a spreadsheet program. After much discusssion, the students decided on an inventory list format. As we created the column headings together on computer, I introduced the children to the software's formatting capabilities, including tool bar, column width, bolding, and underlining. Each student took turns inputting title headings that we had "dimensioned" beforehand on paper. All the students helped one another remember what to do. We saved each version after each student, so as not to lose anyone's work.

LEVEL ONE learning was a slow and time-consuming process at first, for both students and teachers. After the headings were completed, the students enjoyed working in pairs or groups of three, to enter all the inventory data. The students needed to work together. We saw how important it was for them to be able to double check entries and remind each other of how the program works. The students were able to be very independent for this part of the project. We frequently found that teachers were learning right along with students. For example, when one of us accidentally wiped out data, this gave the students the chance to see that anyone can make a mistake when they are new to a process. It also gave us a chance to model coping behaviors and discuss our frustrations as well as reflecting on strategies for not making the same mistakes again!

LEVEL TWO learning required that the students review the inventory data and decide how to best organize it, i.e., alphabetize certain columns, code data, etc. The students and I tried the database function of the spreadsheet and reorganized the inventory to their specifications. I was actively involved in this process. In fact, I too needed other teachers' help to figure out how to use that part of the program. The students quickly became adept at suggesting what might work.

LEVEL THREE was the introduction to the mathematical capabilities in a spreadsheet. The students used calculators and pencil and paper to figure out profit dollars and other things. At first they did this on a large scale on their reports. This, I felt, helped to demystify the spreadsheet's enormous built-in capabilities. After I introduced the concept of making spreadsheet formulas to do the calculations, we would double check each calculation by another means. I would ask the students to verbalize what they wanted to do and why.

My goal was to take the magic out of the computer capabilities and teach them that THEY construct the mathematical relationships they wanted/needed. The spreadsheet mathematics reinforced logical and quantitative reasoning skills. It also strengthened their basic facility with numbers, especially simple decimals and percents.

The impact on students' learning proved to be very satisfying. The finance group's reports were shared with the whole student company. Many excellent business decisions were made due to the timely and usually accurate financial reports. The students' problem solving skills improved over time. This was measured by improved profitability and turn around of our end-of-year sales decline. The school store management fined tuned their decision-making and supervisory skills. The fact that they have internalized ownership of the store was shown by their increased sense of responsibility and creative solutions to problems.

To illustrate just how motivating the finance reports were to the students as whole, let me share a classroom vignette: A non-finance group of two students saw the reports and raised a question. They asked, "How much profit would we have if we sold ALL our inventory?" I suggested they contact the inventory manager and try to figure that out. At this point, the inventory manager was unaware that the spreadsheet could help answer that question quite routinely. So, the students selected calculators as the primary tool for answering the question. Each of them used a calculator to ensure accuracy. The computerized inventory list contained about 50 items, including cost and selling price information. This was going to be a massive undertaking for the class! They devised several methods to calculate overall profit and finally, with my approval, started the laborious task. Several days later, they came up with an answer. After much discussion and bringing in some other students to to review their logic, they decided that their answer was not probable. They found a mistake in their logic and tried again. All together, this must have taken 4 to 6 hours. Finally, we all went to the computer and I reproduced with their help, their logic in the spreadsheet formulas. This time we got a profit amount very lose to their number. Interestingly, the students never complained that the computer work took only 15 minutes! They were very proud of their work and happy just to check it against the computer calculations. Some valuable lessons had been learned by all, which the students verbalized and shared with one another included: (1) think problems through carefully, spending most of your efforts on the logic; (2) computers are great for doing the cumbersome work, which they can do more quickly; (3) computers can be a primary or a secondary tool, which we use along with our own thinking, pen and paper, and calculators.

We ended the year with a profit, I am glad to report, and enough capital to continue our enterprise. We held a business conference in a donated hotel conference room at the end of the school year. Business volunteers gave seminars to small groups of our students about their local businesses and other topics related to our store. Later that day, we had a business lunch. A wonderful time was had by all. As teachers, we are now pondering the the future extensions of our work. We want the future entrepreneurs to be able to use the graphing and charting capabilities, and others. The wish list may get longer but there's one thing of which we are certain. Technology has motivated our students like no other tool before it, and broadened ALL of our experiences in the classroom. We are committed to its continued use.

WEEKLY SALES REPORT Jan. 1994 ITEM NAME	SALES QTY 1-7-94	SALES QTY 1-14-94	SALES QTY 1-21-94	SALES QTY 1-28-94	SALES QTY 2-4-94	SALES QTY TOTAL	SALES $ REVENUE	SALES PROFIT
BASEBALL KICKBALL	0	4	0	0	6	10	$8.00	$2.60
BASKETBALL INFLATABLE	4	6	2	1	14	27	$27.00	$10.80
BOUNCING BALL ASS'T	2	0	0	0	1	3	$2.25	$1.35
COMET BALL	0	0	0	0	0	0	$0.00	$0.00
DIAMOND HI BOUNCE	0	0	0	0	0	0	$0.00	$0.00
GLOW IN DARK BALL 1in.	1	5	0	2	8	16	$4.00	$2.42
JUMPING TUMBLING BALL	0	0	0	1	0	1	$0.80	$0.50
MILKY BALLS	0	1	0	0	1	2	$1.00	$0.80
MINI SHINE BALLS (koosh)	2	4	1	1	2	10	$5.00	$4.25
NAUGHTY KICKBALLS- SMILE FACE	3	10	0	0	8	21	$16.80	$5.46
RAINBOW BOUNCING BALL	0	0	0	0	0	0	$0.00	$0.00
SOCCER KICKBALL	0	6	0	0	3	9	$7.20	$2.34
SPARKLING BOUNCING BALL 21/2"	8	25	4	3		40	$32.00	$14.00
SPORT BALL INFLATABLE	3	6	0	0	0	9	$9.00	$3.60
BIG / CRAYON ERASER ASST	1	14	1	4	2	22	$5.50	$1.54
COIN ERASERS	0	0	0	0	0	0	$0.00	$0.00
MINI ERASERS ASS'T	10	43	50	25	59	187	$28.05	$23.56
NEON FISH & DOLPHIN ERASERS	0	0	0	0	0	0	$0.00	$0.00
PANDA ERASER	3	8	6	4	9	30	$7.50	$2.46
SMILE FACE ERASERS	12	15	8	8	0	43	$10.75	$4.30
STRIPED ERASER STICKS	2	6	4	0	5	17	$10.20	$4.08
PLASTIC FOLDER	0	0	0	0	1	1	$2.00	$0.60
SHINY FOLDER	0	1	0	0	0	1	$2.00	$0.60
CHEWING GUM SHARPENER	1	3	0	0	1	5	$2.50	$0.70
MOM/DAD MAGNET	0	1	0	0	1	2	$1.50	$0.78
SUNGLASS HOLDERS	0	0	0	1	2	3	$0.75	$0.12
TROLLS & KEYCHAINS	2	3	1	1	1	8	$4.00	$0.64
COLORED COMP NOTEBOOKS	1	1	0	0	3	5	$10.00	$3.00
POP A POINTS ARMY	3	2	3	1	7	16	$8.00	$2.82
POP A POINTS SMELLY	0	19	3	3	14	39	$19.50	$9.39
COLORED BIC PENS (ASST)	0	0	2	3	1	6	$2.40	$0.72
FRENCH FRY PENS	0	0	1	1	0	2	$1.00	$0.28
GEOMETRIC DESIGN PENCILS	6	16	0	0	0	22	$2.20	$0.55
HOT STICK BICS	1	0	0	0	1	2	$0.80	$0.24
INSECT PENS- FOAM	0	0	0	0	0	0	$0.00	$0.00
PEN BRACELET	0	0	0	0	3	3	$2.25	$1.17
PENTECK PENS (ASST.)	1	2	4	1	8	16	$6.40	$1.92
RED & BLUE STAR PENCILS	7	13	1	0	0	21	$2.10	$0.53
SHARK PEN- FOAM	5	0	2	0	4	11	$16.50	$6.60
SALES TOTAL	78	214	93	60	165	610	$258.95	$114.72

Barbara Marchewka, fourth grade teacher at Murray Avenue School in Larchmont, New York, has taught a total of 12 years. She holds BS and MA degrees from local universities. Barbara has taught in both public and independent schools. Her responsibilities have included classroom teaching for grades 2, 3, 4, and 6, as well as, Enrichment Teacher, Grade Level Head Teacher, and School Science Coordinator. She has been previously published in TEACHER magazine and has recently co-received a Reader's Digest Mini-Grant for her work in developing/implementing a Grade 4 Economics Curriculum. Additionally, Barbara was a corporate Junior Achievement volunteer during part of her 9 years in business. She has worked in both domestic and international product management and worked in Spain during part of her tenure in marketing. She is currently happily teaching fourth graders in the Mamaroneck School District.

Part III.

APPENDICES

A. TASK FORCE PARTICIPANTS' NAMES AND ADDRESSES

B. WTEG PROJECT STRUCTURE

C. CUSTOMIZED CURRICULUM FOR TEACHER EDUCATION

Appendix A.

TASK FORCE PARTICIPANTS' NAMES &ADDRESSES

Ms. Alison Bankes
Todd Elementary School
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Prof. Lawson Bowling
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Mr. Ken Levy
Isaac E. Young Middle School
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Ms. Barbara Marchewka
Murray Avenue School
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Prof. Lucille Peterson
Art of Teaching
Sarah Lawrence College
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Department of Education
Mercy College
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Ms. Dawn Schmitt
Pequenakonck Elementary School
Old Route 124
North Salem, New York 10560

Dr. Peter Schneckner
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Ms. Barbara Uhl
Washington Irving Middle School
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North Tarrytown, New York 10591

FACILITATORS:

Dr. Cornelia Brunner and
Dr. Margaret Honey
Center for Children and Technology
Bank Street College of Education
610 West 112th Street
New York, NY 10025

Prof. Antony Halaris and
Ms. Joanne L. Steele
Institute for Computer Studies
Iona College
715 North Avenue
New Rochelle, NY 10801

Dr. Barbara C. Freeouf and
Dr. Shirley L. Mow
Westchester Education Coalition, Inc.
222 Bloomingdale Road
White Plains, NY 10605

Appendix B.

W.T.E.G. PROJECT STRUCTURE

Project Director
Associate Project Director

Advisory Council
Subcommittee/Education Chairs

TASK FORCES *

1991-93		1993-95	
Diversity and the Family	Technology	Mathematics and Science	Work-Based Learning

*Education faculty, Classroom Teachers, and Facilitators

Appendix C.

CUSTOMIZED CURRICULUM FOR TEACHER EDUC.

Westchester Education Coalition participants were asked to pick a track for the Technology Training series. These tracks included spreadsheet development, wordprocessing, or multimedia. All participants attended the Introduction to Windows and File Management seminars as well as the seminars offered in their track. All seminars were hands on with each student at their own personal computer. Multimedia seminars were handled by an IBM consultant as a number of workshops. Some participants completed multiple tracks by attending a one week summer workshop.

Customized Curriculum

Westchester Education Coalition

Iona College Institute for Computer Studies

INSTITUTE FOR COMPUTER STUDIES

715 NORTH AVENUE o NEW ROCHELLE, NEW YORK o 10801 o (914) 633-2162

Introduction to Windows

Westchester Education Coalition

Objective:

To provide the participant with basic computing literacy skills. Topics include hardware functions and software applications, including Windows.

Audience:

Individuals who have limited or no previous computing experience and who want to develop computing literacy skills.

Seminar Outline

Welcome and Introduction
- ♦ Participants' Background
- ♦ Previous Computing Experience

Introduction to the IBM PC
- ♦ Setting up a Computer
- ♦ Overview of PC Applications
- ♦ PC Fundamentals
- ♦ Booting the System
- ♦ Introductory DOS Commands

Module I - The Windows Interface
- ♦ Understanding Windows Terminology
- ♦ Working in the Windows Environment
- ♦ Choosing Menus and Commands
- ♦ Shortcut Keys for Editing
- ♦ The Program Manager

Module II - 'Windowing' Applications
- ♦ Starting and Quitting Applications
- ♦ Switching Between Applications
- ♦ On-Line Help Facility
- ♦ Control Panel Features

Module III - Using the File Manager
- ♦ Operating the File Manager
- ♦ Changing Drives
- ♦ Starting an Application from the File Manager

Module IV - Customizing the Windows Screen
- ♦ Opening Groups and Shrinking them to Icons
- ♦ Creating a Group
- ♦ Adding Program Items to a Group
- ♦ Using the Clipboard
  - ● Cutting Information to the Clipboard
  - ● Pasting Information to the Clipboard

Review and Wrap-up
- ♦ Questions and Answers

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Introduction to Word for Windows

Westchester Education Coalition

Objective:

To introduce participants to the features of Word for Windows. Included will be retrieving, saving, editing, spell checking, printing, document enhancement, text manipulation, tables & merging.

Audience:

Individuals familiar with the IBM PC who have the desire to automate their reports with Word for Windows.

Seminar Outline

Welcome and Introduction
- ♦ Participants' Background
- ♦ Previous Computing Experience

Overview - The Windows Environment
- ♦ Understanding Windows Terminology
- ♦ Selecting Options from Dialog Boxes
- ♦ Controlling Windows
- ♦ The File Manager

Module I - Word for Windows Overview
- ♦ Function Keys
- ♦ Document Views
  - ● Draft View
  - ● Page View
  - ● Outline View
- ♦ Summary Information

Module II - Editing a Document
- ♦ Selecting Text from the Keyboard
- ♦ Edit Search
- ♦ Utilities
- ♦ Spell Check

Module III - Formatting a Document
- ♦ Format Document
- ♦ Format Paragraph
- ♦ Format Character
- ♦ Quick Formatting
  - ● Using the Ribbon
  - ● Using the Ruler

Module IV - Printing a Document
- ♦ Printing a Document

Module V - Enhancing a Document
- ♦ Edit Header
- ♦ Insert
- ♦ Overview of Sections

Module VI - Text Manipulation
- ♦ Editing Text
  - ● Cut and Paste or Copy and Paste

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Intermediate Word for Windows

Westchester Education Coalition

Objective:

To introduce participants to the features of Word for Windows. Included will be retrieving, saving, editing, spell checking, printing, document enhancement, text manipulation, tables & merging.

Audience:

Individuals familiar with the IBM PC who have the desire to automate their reports with Word for Windows.

Seminar Outline

Welcome and Introduction
- ♦ Participants' Background
- ♦ Previous Computing Experience

Module VII - Table Handling
- ♦ Insert Table
- ♦ Summary of Keys in Tables
- ♦ Format Table

Module VIII - Merging Documents
- ♦ The Main Document
- ♦ The Data Document
- ♦ Print Merge
- ♦ Envelopes
- ♦ Template for Labels

Module IX - Advanced Document Formatting
- ♦ Snaking Columns
- ♦ Style Sheets
- ♦ Tables
- ♦ Editing a Table
- ♦ Document Templates
- ♦ Template Design
- ♦ Table of Contents
- ♦ Glossaries

Module X - Advanced Character Formatting
- ♦ Symbols
- ♦ Format Character

Module XI - Graphics Capabilities
- ♦ Graphics
- ♦ Positioning a Picture
- ♦ Sizing a Picture
- ♦ Format Position

Module XII - Macro Generation
- ♦ Macros
- ♦ Assigning Shortcut Keys to Macros

Review and Wrap-up
- ♦ Questions & Answers
- ♦ Evaluations

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Introduction to Excel

Westchester Education Coalition

Objective:

To introduce participants to the fundamentals of Excel including cell entries, formula entry & replication, copying, moving & printing.

Audience:

Individuals familiar with PC systems who have a desire to automate their spreadsheets with Excel.

Seminar Outline

Welcome and Introduction
- ♦ Participants' Background
- ♦ Previous Computing Experience

Module I - The Windows Interface
- ♦ Windows Applications
- ♦ Keyboard Actions
- ♦ Moving a Window
- ♦ Starting & Quitting Applications
- ♦ Switching Between Applications

Module II - Excel Basics
- ♦ Cursor Movement
- ♦ Function Keys
- ♦ Entry Types
- ♦ Excel vs. Lotus 1-2-3

Module III - Template Development
- ♦ Creating a Template
- ♦ Inputting Formulas/Relationships
- ♦ Copying Formulas

Module IV - Template Modification
- ♦ Modifying a Template
- ♦ Changing the Column Width
- ♦ Changing the Numeric Format
- ♦ Creating User-Defined Formulas
- ♦ Copying Cells

Module V - Customization & Printing
- ♦ Manual Page Breaks
- ♦ Print Titles
- ♦ Page Layout

Review and Wrap-up
- ♦ Questions & Answers
- ♦ Evaluations

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Intermediate Excel

Westchester Education Coalition

Objective:

To introduce participants to additional Excel features including formatting, multiple windows and spreadsheet & printing techniques.

Audience:

Individuals familiar with Excel who have a desire to further automate their spreadsheets.

Seminar Outline

Welcome and Introduction
- ♦ Participants' Background
- ♦ Previous Computing Experience

Modules I & II - Spreadsheet Techniques
- ♦ Absolute Addressing
- ♦ Naming a Cell, Range or Multiple Ranges
- ♦ Using Built-in Functions
- ♦ Breaking a Window into Panes
- ♦ Moving Between Panes
- ♦ Opening Multiple Windows

Module III - Spreadsheet Formatting
- ♦ Tool Bar
- ♦ Text Boxes
- ♦ Text Editing Commands
- ♦ Using Notes

Module IV - Printing Techniques
- ♦ Setting & Removing Manual Page Breaks
- ♦ Setting & Removing Print Titles
- ♦ Setting & Removing the Print Area
- ♦ Page Layout Options

Module V - Linking Files
- ♦ Linking Worksheets
- ♦ Linking Files & Sheets
- ♦ Linking Worksheets by Pointing
- ♦ Changing the Layout of Linked Worksheets

Review and Wrap-up
- ♦ Questions & Answers
- ♦ Evaluations

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File Management

Westchester Education Coalition

Objective:

To provide the participant with an understanding of DOS and Windows as tools to organize their files.

Audience:

Individuals who have had an opportunity to work with personal computer applications and need to understand how to organize their work.

Seminar Outline

Welcome and Introduction
- ♦ Participants' Background
- ♦ Previous Computing Experience

Module I - The Role & Function of DOS
- ♦ DOS vs Windows
- ♦ Memory & Storage Manipulation

Module II - Internal DOS Commands
- ♦ DIRectory Commands
  - Options
  - WildCard Usages
- ♦ COPY & DELete
- ♦ Organizing the Data Diskette
  - Make Directory (MD)
  - Change Directory (CD)
  - Remove Directory (RD)

Module III - Using File Manager
- ♦ The File Manager menu
- ♦ Formatting diskettes
- ♦ Move, copy, delete, & rename
- ♦ Creating subdirectories

Review and Wrap-up
- ♦ Questions & Answers
- ♦ Evaluations

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Electronic Facilities at Iona College

PART I

PART II