Now That Your Know the Basics - Rubrics to Guide Professional Development: Part 1, Leading & Learning with Technology, Dec/Jan 2000-01

Now That Your Know the Basics - Rubrics to Guide Professional Development: Part 2, Leading & Learning with Technology, Feb/Mar 2001

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Now That All Teachers Know How to Word Process: Rubric-Guided Professional Growth Targets (Part One)

Our district over the past few years has suffered from increasingly smaller numbers of teachers interested in our technology classes. Happily, we discovered it was because we've been good at what we do.

A survey conducted in the spring of 1998 showed that 97% of our 200 elementary teachers and 93% of our 200 secondary teachers identified themselves as "computer literate." That is was not really surprising because we had been actively working both formally and informally with teachers in computer staff development programs for more than five years.

Like many computer training classes, ours had been designed to give teachers a familiarity with the computer skills that improve their professional productivity: basic computer operations, productivity software, telecommunication, and record keeping. We tailored our classes to help staff master the skills defined by Mankato's 10 Beginning CODE 77 Rubrics. www.doug-johnson.com/dougwri/Rubbeg.HTM And our teachers have extensively used those skills to the advantage of their students.

But we also realized that if technology is to realize its powerful potential for improving education, it must be used for more than just automating the traditional methods and practices of teaching. And the kind of educational restructuring we anticipate technology will help us

accomplish, demands sophisticated technology uses that can't be taught in three-hour, after-school classes.

Rather than simply being a tool that allows a common task to be done more efficiently, the computer can help fundamentally change 1) how instruction is delivered, 2) how student performance is measured, and 3) how teachers view themselves as professionals. The technology is used to actually restructure the educational process to allow it to do things it has never been able to do before. These things include assuring that:

- all students master the basic skills of writing, reading, and computation
- all students practice authentic information literacy and research skills and the higher-order thinking skills inherent in them
- all students have access to top-quality information resources, including human resources, regardless of location
- all teachers can use technology to provide students and parents with
  - individual education plans (IEPs)
  - continuous feedback on how well students are meeting their learning goals
  - opportunities for virtual student performance assessments
- all teachers have the tools and ability
  - to locate the research findings that will guide their educational practices
  - to collect the data that measures the effectiveness of those practices.

So how do we start to make these things happen? Mankato schools have developed the following set of ten rubrics that describe levels of mastery of the technology skills that can help restructure education. The rubrics are designed to help teachers move to a second, more powerful

level of professional computer use by guiding them on their own learning paths. They are also used to help our schools measure their teacher training effectiveness.

For each rubric we have designed four levels of proficiency:
Level 1: Pre-awareness
Level 2: Awareness
Level 3: Mastery
Level 4: Advanced

What kind of staff development program is built around indicators like these? That's the subject of the continuation of this article in the next issue of *Leading and Learning*.

Rubrics for Restructuring

I. Instructional software use

Level 1 I do not use instructional software as a part of my instructional program, nor am I aware of any titles that might help my students meet their learning goals.

Level 2 I use a few computer programs as an instructional supplement, as a reward, or children with special needs.

Level 3 I use several programs (drill and practice, simulations, tutorials, etc.) chosen by my department or grade level to help all my students meet specific learning objectives. The software allows me to teach and/or reinforce concepts more effectively than traditional methods. When it is available, I use the software's management system to help assess individual student performance. I use the school's integrated learning system in a purposeful way.

Level 4 I seek out new programs for evaluation and adoption. I know sources of software reviews and keep current on developments in computer technologies through professional reading and conference attendance. I share my findings with other

professionals.

II. Using technology to improve student writing

Level 1 I am not familiar with any technologies that would allow me to help my students improve their writing skills.

Level 2 I ask that the final draft of some student writing assignments be wordprocessed. I do not expect or encourage my students to compose or edit using the computer.

Level 3 I help students use the computer in all phases of the writing process from brainstorming to concept mapping to editing. This includes the use of idea generators, portable writing computers, outlining tools, spelling and grammar checkers, and desktop publishing tools. I use technology to help students share their work for a wide reading audience.

Level 4 I store portfolios of my students' work electronically. I share successful units with others through print and electronic publishing and through conference presentations and workshops. I look for specific technology tools to help my students improve their writing skills.

III. Information literacy skills using secondary sources

Level 1 I am not familiar with the term information literacy, nor do I know why such skills are important.

Level 2 As a part of my curriculum, I have library research projects, and I support the library skills taught by the media specialist. I am aware that there are electronic resources available to my students.

Level 3 My curriculum includes at least two information literacy projects, team-taught with the media specialist. I understand the Big Six information literacy process or a similar information literacy process and design student projects so that they require higher-level thinking skills, use and cite electronic information sources, require the use of computer productivity software, and are authentically assessed.

Level 4 I am actively involved in curriculum planning teams and advocate for multidisciplinary units and activities that require information literacy skills. I share successful units with others through print and electronic publishing and through conference presentations and workshops.

IV. Information literacy skills - primary sources

Level 1 When asking students to do research, I expect them to only use secondary resources like books, magazines, or reference materials.

Level 2 As a part of my curriculum, I have some units that require the collection and use of original data. I generally can predict the outcome of such experiments.

Level 3 My curriculum includes at least two information literacy projects that require the collection of original data to answer a genuine question. I may use tools to collect data like computerized probes and sensors, online surveys, interviews, or digitized sources of historical records, as well as tools to record, organize, and communicate the data such as databases and spreadsheets.

Level 4 I am actively involved in curriculum planning teams and advocate for multidisciplinary units and activities that require information literacy skills. I share

successful units with others through print, electronic publishing, conference presentations, and workshops.

V. Modification of instructional delivery

Level 1 I have one or two effective methods of delivering content to my students. I do not use technology that requires that I change my instructional methodology.

Level 2 I have tried units or projects that are student-directed, use small groups, or are highly individualized, but I primarily use teacher-directed, whole group instruction.

Level 3 I use a variety of instructional delivery methods and student grouping strategies routinely throughout the year. I can design activities and approaches that both best fit the learning objectives and the availability of the technology available to me. I can use small groups working cooperatively or in rotation to take advantage of student to equipment ratios of greater than one to one.

Level 4 I continuously try new approaches suggested by research or observation to discover the most effective means of using technology to engage my students and meet curricular goals. I work with a team of fellow teachers to create, modify, and improve my practices in this area.

VI. Assessment of student performance

Level 1 I evaluate my students using objective tests only.

Level 2 I evaluate some student performances or projects using subjective criteria. I save some student work for cumulative folders and parent conferences, and print some electronically produced student work.

Level 3 I use a wide range of assessments to evaluate student projects and performances. I can use technology to help create assessment tools like checklists, rubrics, and

benchmarks that help students assess their own performances and allow me to objectively determine the quality of student work. I ask students to keep both a physical and electronic portfolio of their work. I have a computerized means of aggregating performance data for my class that I use to modify my teaching activities and strategies.

Level 4 I continuously try new approaches suggested by research or observation to discover the most effective means of using technology to help assess student learning. I work with a team of fellow teachers to create, modify, and improve my work in this area.

VII. Individualization of instruction and educational program

Level 1 I modify my curriculum or instructional methods only for students with identified special needs.

Level 2 I occasionally give students the choice of assignments in my class, but all class members (unless they are in special education) must meet in the same learning objectives within the same time frame. Skill remediation is done during summer school or informally during or after school.

Level 3 With the assistance of the student, parents, and appropriate specialists, I create a learning plan for each of my students. I track the accomplishment of learning goals in the plan using a computerized tool. I use this tool during parent conferences and for school or state reporting.

Level 4 I provide suggestions about the content and design of the individualized computerized planning and report tools.

VIII. Adaptive technologies

Level 1 I am not aware of how technology can help students with physical or mental limitations.

Level 2 I work with students who may bring with them special devices that allow them to work and communicate in the classroom.

Level 3 I use technology when appropriate to help students with special learning needs. This includes detailed individualized education plans and specialized communications devices.

Level 4 I provide professional growth opportunities for other teachers in the use of adaptive technologies.

IX. Professional growth and communication

Level 1 I do not use electronic resources for professional growth or communication.

Level 2 I can find lesson plans and some research in online databases. I correspond with parents and other teachers using e-mail.

Level 3 I use the Internet and other on-line resources to obtain research, teaching materials and information related to the content of my classes. I read electronic newsletters and journals to keep current on educational practices. I participate in electronic discussion groups and chat rooms that are related to my area of education. I use a computerized presentation program when giving workshops or speaking at conferences. I take part in distance learning opportunities using technology.

Level 4 I organize professional growth opportunities for other teachers and feel comfortable

teaching other staff members about the use of technology.

X. Research and evaluation of technology use

Level 1 I have not attempted to determine whether the use of instructional technology has made a difference in my student's learning or classroom climate.

Level 2 I gather, use, and share anecdotal information and observations about student use of technology in my classroom.

Level 3 I use action research and aggregated data to accurately determine whether the technology and methodology I am using has an impact on how well my students learn and on school climate.

Level 4 I participate in formal studies of the impact of technology on student learning conducted by professional groups and academics. I have designed such studies as part of my own professional education. I report electronically and in print the findings of my research to other professionals.

What is the relationship between "technology literacy" and "information literacy?"

- Fifth-grade students use a multi media program to communicate their findings about how early immigrants in the state lived and worked.
- Eight grades students use a spreadsheet and graphing program to analyze the results of a survey on their fellow students attitudes about smoking and drinking.
- High school juniors use probes attached to a computerized graphing program to test the effect of salinity on the freezing properties of water.

Are these student demonstrating the use of technology skills or information literacy skills?

The International Society for Technology in Education (ISTE) has released "The National Educational Technology Standards" <http://cnets.iste.org/>. ISTE's technology skills are divided into six broad categories of application:

1. Basic operations and concepts
2. Social, ethical, and human issues
3. Technology productivity tools
4. Technology communications tools
5. Technology research tools
6. Technology problem-solving and decision-making tools

The focus on these clear and well-written standards is on the *use of the technology itself*.

Information literacy curricula (like The Big6 *big6.com*) ask students to use a variety of resources to find information that will help solve a problem or answer a question. Information literacy processes usually include these steps:

1) identifying the problem
2) locating and evaluating information sources,
3) extracting relevant information,
4) organizing and synthesizing the information,
5) communicating the findings,
6) evaluating the product and the process

While technology is often a critical tool in an information literacy process (see Eisenberg and Johnson, "Computer Literacy and Information Literacy: A Natural Combination." www.ed.gov/databases/ERIC_Digests/ed392463.html), the focus is on the problem-solving process itself.

While both "literacies" share many common elements, neither can properly be called a true subset of the other. Both share the belief that the most powerful uses of technology include the users ability to communicate, to locate information, and to solve problems. But technology literacy emphasizes technology operation while information literacy acknowledges that non-technological resources (people, print, primary sources) and a non-technological product (oral report, term-paper, diorama) can also be an acceptable result.

Regardless of the terminology, all educators need to advocate the integration of technology into the content areas. Teachers, media specialists, and administrators recognize that separate "computer classes" do not really allow students learn to apply skills in meaningful ways. This is an important shift in approach and emphasis. Projects like the ones above use technology as tool to complete a educationally meaningful task, and computer skills become

a critical component of the total learning outcomes of the project.

Now That All Teachers Know How to Word Process: Rubric-Guided Professional Growth Targets (Part 2)

Part 1 of this article examined important ways that technology could be used not just to automate our current instructional practices (word processed worksheets, slideshow-illustrated lectures, etc.), but to restructure the educational process in order to help more students meet basic academic goals and achieve at higher levels. A description of ten competencies (Rubrics for Restructuring) suggested what teachers are going to need to know and be able to do with technology if they wish to fundamentally improve their instructional practices.

So how do we start to make these things happen? Obviously such complex skills cannot simply be taught in a series of three hour, hands-on workshops. They will require a sufficiently sustained effort that a long-range staff development plan is necessary. And now, instead of a generic set of skills that all teachers will be expected to master, individuals will need to concentrate on one or two areas in which to develop expertise. Individual staff development plans need to be a large component of any building or district plan. What does this approach look like in a real school district?

Mankato Area Public School district, like many, asks that teachers each year meet a "professional growth target." These are concentrated areas of learning that the district expects the teacher to work on during the school year. Though our teachers have chosen to learn about a variety of important areas of education (learning styles, brain research, cooperative groups, authentic assessment, etc.), we have developed tools that make choosing an area of educational computer use attractive and meaningful. We also ask that all teachers for whom the district upgrades their desktop computers select a professional growth target in technology use. "What

will you do with a new computer that you couldn't do with your old one?" we ask.

To meet a professional growth target for a year, we expect teachers to take about 30 non-school hours to learn enough to move at least one level on one of the Rubrics for Restructuring. The teacher, principal and other specialists jointly plan how those 30 hours are spent, and how the gain in knowledge and skills can be demonstrated and documented. To help assist in that planning, the district technology department has identified for each rubric:

1. **A sample growth plan:**

(All examples support Rubric III. Information literacy skills using secondary sources.)

Professional growth plan to meet this competency (to be written in collaboration with curriculum director or department chair and technology coordinator or media specialist):

A. I will obtain the district's information literacy curriculum, library and technology student benchmarks, assessment tools, and activity suggestions. (If these items do not exist, an alternate professional growth plan would describe how a teacher could help develop them.) I will examine my curriculum to determine if proscribed projects or lessons that teach information literacy skills exist.

B. I will review the literature for current descriptions of information literacy, especially as it applies to information technologies and digital information sources like the Internet.

C. I will plan and teach two projects that have information literacy/technology skills.

D. I will assess student work on these projects using tools that determine whether individuals met the benchmarked level of performance and use the findings as part of the student's grade, portfolio, or progress report.

E. I will examine the performance data for my classes and aggregate it to determine the efficacy of the activities and instruction and/or the validity of the benchmarks. I will share my findings through in-district workshops and/or on staff development days.

F. (Optional) I will take a college class, seminar, or workshop on information literacy and/or

electronic research methods.

2. Suggestions for items in an assessment portfolio:

Your portfolio might include:

A. Descriptions of units taught in your classroom that have both information literacy objectives and content objectives

B. Assessment tools used with students on these projects

C. A copy of the district's information literacy curriculum and student performance benchmarks in technology /information literacy

D. Personal journal reflections on teaching information literacy skills including observations on what does and does not work well

3. An explanation of why teachers need to master the skills in the rubric.

Why teachers need an information literacy technology skill set using secondary sources.

The rapid growth of information in the past 50 years has placed an increased emphasis on the ability to find and use information, rather than simply memorize it. And while most school curricula have included library and research skills, changes in technology and educational philosophy have radically changed the skills' scope and purpose:

A. *Process model of information literacy.* Rather than students learning isolated skills on which they are given a test, best practice shows that library, computer, and research skills need to be combined and taught as an applied process. A variety of such information problem solving process models exist including Eisenberg and Berkowitz's "Big6" approach. (Information Problem-Solving. Ablex, 1990.) Most models ask the researcher to:

    a. Identify the research problem or question and determine the information needed to solve it.

    b. Determine possible sources of the needed information.

    c. Locate relevant information within the sources.

d. Extract, record, and cite the information.

e. Synthesize, evaluate, organize, and communicate or use the information.

f. Evaluate the outcome and process.

B. *Integration into the classroom.* The research process is moving away from being taught only in the media center or English classroom. The responsibility for students becoming "information literate" is school wide and taught in all subject areas, as well as in multidisciplinary units. A teaching partnership with a qualified school media specialist is essential.

C. *Shift in role of the teacher from information provider to facilitator.* Many teachers recognize that by helping students find, evaluate, analyze, and use information their role becomes even more important that that as lecturer.

D. *Electronic resources*. The printed encyclopedia and collection of magazine back issues are rapidly being replaced by their CD-ROM or on-line versions that are more comprehensive, timely, and easily searched. Internet access to remote library catalogs and the World Wide Web have vastly expanded the resources available to student researchers in even the smallest schools. The unregulated, unedited nature of the Internet is demanding an increased emphasis on teaching students how to evaluate the information they find.

E. *Electronic communicating devices.* Just as information can be found through electronic means, the ability to communicate it using technology has also vastly increased. Word-processed term papers, electronic slide presentations, hypermedia productions, and web pages are all common methods of reporting the findings of research.

F. *Genuine questioning and problem solving.* Using research to answer genuine questions of student interest and help solve real life problems promotes higher order thinking and increases student interest in learning.

> These changes have come about since most teachers have been in school themselves. For some, the shift from information provider to information guide will be a difficult one. But these are skills that will allow students to be the creative problem-solvers that employers are demanding.

Building principals and staff development committees have the responsibility for evaluating the effectiveness of staff development efforts, including those in technology. The degree to which conferencing, planning and assessment of the portfolios is carried out will vary from building to building.

At the district level, we have assessed the viability of such an individualized staff development approach. By using a survey tool, we found of the 38 respondents that:

- 70% felt they had successfully completed the PGT
- 70% thought the plan was clear
- 81% found the work they did meaningful
- 55% found the work they did learning about technology also helped them in other educational areas
- 78% found there were sufficient PGT options from which to choose
- 44% found these PGTs more rigorous than those in the past; 33% found them as rigorous

The training to help teachers master the complex skills suggested by the Rubrics for Restructuring will continue to be a far greater, more time consuming task than the simple hands-on classes in which word processing, e-mail and file management are taught. And the technology department can't do it alone! Staff development in "technology" will increasingly

require collaborative efforts with experts in the content areas, child development, curriculum, assessment, research, and evaluation.

These challenging skills will take time, effort, and courage to master, but schools with teachers who do so will be in a superior position to meet future educational demands.

Side Bar: A Tale of Three Teachers

Mike's Plan for Improving His Students' Writing Abilities (Rubric II)

One of the goals of the middle school where Mike taught Language Arts was to improve student writing. Working with his language arts curriculum chair and building staff development committee, Mike's professional growth plan included:

- Reviewing current literature and interviewing one of the state's "best practices" experts on process writing and the use of technology.
- Attending the state's technology conference to attend sessions and see demonstrations of writing software.
- Taking a class in and experimenting with prewriting software (Inspiration) on two student writing assignments.
- Using individual portable computers (AlphaSmarts) on two writing assignments.
- Comparing the results of the technology-enhanced writing products with those using standard writing practices.

Mike's portfolio included:

- Printouts of three articles summarizing current uses of technology.
- Sample "concept maps" generated by students in his classes as a part of prewriting assignments.
- Writing samples of individual students evidencing differences between handwritten work and word-processed work.
- A brief summary of his observations on using technology as a part of the writing process. (Prewriting software led some students to better organization and more depth in their writing;

spelling, readability, and enthusiasm improved when students used the portable computers; a lack of keyboarding skills prevented many students from writing with the portable computers successfully.) Mike found that his experiences supported what research and best practices were saying about technology and writing, and he plans to keep using both the prewriting software and portable computers next year.

Carol Tries a Project that Asks for Primary Sources (Rubric IV)

The state's new graduation requirements ask that all history students do a project requiring primary research. Carol decided she wanted to place this requirement in her 11th grade world history class's World War II unit. Her plan included:

- Working with the social studies chair and media specialist to determine the outcomes of the unit.
- Taking afterschool workshops on locating and evaluating information sources on the Web taught by the school media specialist.
- Designing and teaching a unit that would ask students to find information on contemporary hate groups and compare their views and propaganda strategies to radical political groups of the 1930s and 1940s. The students' finding would be shared in a multimedia presentation with the rest of the class.
- Working with the school's assessment coach to design a checklist assessment tool for the presentations.

Carol's portfolio included:

- A bibliography of resources and teaching materials on contemporary hate groups.

- A collection of comments from students and parents about the project. (Highly positive.)
- A copy of the assessment tool and brief evaluation of the project with suggested improvements for the following year's classes.

Chris Improves Home School Communications (Self designed plan)

Third grade teacher Chris wanted to help improve his students' work completion rate, and felt he needed the help of their parents to do so. He could not find a district-suggested rubric that fit well with his plan, but his principal agreed that his goal was important. Although not using one of the Rubrics for Restructuring as a guide, Chris still mapped out a growth plan and a portfolio. His plan included:

- Collecting parent email addresses during preconferences (He found over 75% of his students' parents had email access either at home or at work.)
- Setting a goal of sending one email message about class happenings each week to parents.
- Taking a class in web page building so he could create a classroom web page that would display student work, contain information and links about class projects, and explain classroom expectations. He also put out the week's spelling word list.
- At his principal's suggestion, Chris teamed with building media special to teach an evening class to parents who wanted to know more about getting Internet access and using it.

Chris's portfolio at the end of the year included:

- Printouts of sample emails sent to parents and comments received back from parents.
- Printouts of his website.
- A short evaluative summary of the plan including anecdotal evidence of its effect on work

completion rate (much improved), the reception of electronic communication by parents (very positive), the success of the parent training session (low turn out, but positive for those who attended), and suggestions for other teachers attempting to do the same and for the district (create templates for classroom web pages). Chris felt the first year's implementation of this plan was more work than he had anticipated, but the results were worth it.