<table>
<thead>
<tr>
<th><strong>Title</strong></th>
<th>Selecting software for curricular resources.</th>
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<tbody>
<tr>
<td><strong>Author(s)</strong></td>
<td>Frohlich, Robert.</td>
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<tr>
<td><strong>Date</strong></td>
<td>1998</td>
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<tr>
<td><strong>URL</strong></td>
<td><a href="http://hdl.handle.net/10220/1802">http://hdl.handle.net/10220/1802</a></td>
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<td><strong>Rights</strong></td>
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Paper No. 12
Selecting Software for Curricular Resources

Robert Fröhlich
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17 November, 1998

The task of selecting appropriate software as curricular resources for educational application, is something for which few educators have received any formal training, but are often required to undertake in the course of their employment. When selecting curricular resource software, the paramount concern must be to ascertain whether the pedagogical needs have been addressed. It is only through a carefully planned approach that it is possible to reveal the realisation of instructional objectives.

Models

Different models have been developed for evaluating software, however, few are designed specifically for evaluating educational software. Most of the existing models approach the evaluation from a wide perspective and, if anything, focus on user interface factors and not pedagogical factors. A pedagogical model for selecting educational software has been outlined (Komoski, P.K., & Plotnick, E. 1995), which involves seven steps.

| 1. Analyse Needs                  | • Needs & Goals  
|                                   | • Objectives  
| 2. Specify Requirements          | • Compatibility with Available Hardware  
|                                   | • Cost – Multiple Copies? Site License Necessary?  
|                                   | • User Friendliness  
|                                   | • Level of Interaction Desired  
|                                   | • Adequacy of Documentation  
|                                   | • Access to Technical Support via Toll-Free Number  
|                                   | • Direct Correlation with Instructional Objectives and Curriculum Requirements Identified in Needs Analysis  
|                                   | The following criteria should be applied within the context of the Objectives and Student's Needs.  
|                                   | • Content  
|                                   | • Instructional Presentation  
|                                   | • Demands Placed on the Learner  
|                                   | • Technical Features  
|                                   | • Documentation and Management Features  
| 3. Identify Promising Software    | • Educational Products Information Exchange (EPIE)  
|                                   | • Listservs – AskERIC@ericir.syr.edu  
| 4. Read Relevant reviews          | • ERIC database etc.  
| 5. Preview Software               | • Observe Students  
|                                   | • Are Educational Objectives Achieved?  
|                                   | • Preview with own Students or Avoid Purchase!  
| 6. Make Recommendations           | • Select Most Desirable Software after Systematic Evaluation of all alternatives in terms of Educational Objectives and Constraints  
|                                   | • Establish Quantitative Method for rating each alternative against the Selection Criteria established in Step 2  
|                                   | • Evaluate Relative Importance of each Selection Criteria – Preview should probably be rated high  
|                                   | • Create Written Report  
| 7. Get Post-Use Feedback          | • Determine Conformance or Discrepancy to Enabling Objectives specified in Step 1  

Selecting Software for Curricular Resources
Software is often evaluated by educators before being implemented, in an attempt to enhance the learning experience of their students. Through the use of exemplary resources, students may then be offered a richer learning environment. However, to be able to truly evaluate curricular resource software, one must first look at who the students are, and what is the desired knowledge to be conveyed. This investigation must be undertaken before we can look at the methods available to support the curriculum. Heinich et al. (1996) devised the ASSURE model as a procedural guide for planning and conducting instruction that incorporates media (curricular resource software), specifying six stages:

A: Analyse the Learner  
S: State the Instructional Objectives  
S: Select Methods, Media and Materials  
U: Utilise Media and Materials  
R: Require Learner Participation  
E: Evaluate and Revise

This model appears to be more useful because it involves the students from an earlier stage. It also facilitates a more iterative process through the inclusion of revision. An entire piece of software should not be ignored and discarded because it fails to meet all the instructional objectives specified. If it meets some of the objectives, better than the other products available, sections of it may be used as an effective tool to assist students with a particular segment of the topic.

**Instruments**

In order to be able to evaluate any software objectively it is good to have a well developed systematic instrument such as an evaluation form. This can be a quantitative instrument or checklist, where the evaluator simply ticks an appropriate box against a known grading scale or rubric (e.g. Poor; Fair; Good; Excellent); it can take the form of a questionnaire, where sufficient space is allowed for the evaluator to compare the software product to a known set of heuristics and write detailed comments; or it can be a combination of both.

A checklist is used by Children's Software Revue, where evaluators respond to items by ticking one of four possible responses (always; some extent; never; and N.A.-Not Averaged), to six different categories of criteria.

<table>
<thead>
<tr>
<th>I.</th>
<th>A.</th>
<th>S. E.</th>
<th>N.</th>
<th>N.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Packaging Integrity</strong> (Does the box accurately represent the software?)</td>
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<td></td>
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</tr>
<tr>
<td>1.</td>
<td>Clearly stated educational objectives and age appropriateness</td>
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<td></td>
<td></td>
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<tr>
<td>2.</td>
<td>Described specific learning skills addressed by software content</td>
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<tr>
<td>3.</td>
<td>Used true screen shots to illustrate content features</td>
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<tr>
<td><strong>II.</strong></td>
<td><strong>Ease of Use</strong> (Can a child can use it with minimal help?)</td>
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</tr>
<tr>
<td>1.</td>
<td>Skills needed to operate the program are in range of the child</td>
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<td></td>
<td></td>
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<tr>
<td>2.</td>
<td>Children can use the program independently after the first use</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3.</td>
<td>Accessing key menus is straightforward</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4.</td>
<td>Reading ability is not prerequisite to using the program</td>
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<td></td>
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<tr>
<td>5.</td>
<td>Graphics make sense to the intended user</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>6.</td>
<td>Printing routines are simple</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>7.</td>
<td>It is easy to get in or out of any activity at any point</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Getting to the first menu is quick and easy</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>9.</td>
<td>Controls are responsive to the touch</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>10.</td>
<td>Written materials are helpful</td>
<td></td>
<td></td>
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<tr>
<td>11.</td>
<td>Instructions can be reviewed on the screen, if necessary</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Children know if they make a mistake</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>13.</td>
<td>Icons are large and easy to select with a moving cursor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Installation procedure is straightforward and easy to do</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>III.</strong></td>
<td><strong>Childproof</strong> (Is it designed with &quot;child-reality&quot; in mind?)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Survives the &quot;pound on the keyboard&quot; test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Offers quick, clear, obvious response to a child's action</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>The child has control over the rate of display</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. The child has control over exiting at any time
5. The child has control over the order of the display
6. Title screen sequence is brief or can be bypassed
7. When a child holds a key down, only one input is sent to the computer
8. Files not intended for children are safe
9. Children know when they've made a mistake
10. This program would operate smoothly in a home or classroom setting

IV. Educational (What can a child learn from this program?)
1. Offers a good presentation of one or more content areas
2. Graphics do not detract from the program's educational intentions
3. Feedback employs meaningful graphic and sound capabilities
4. Speech is used
5. The presentation is novel with each use
6. Good challenge range (this program will grow with the child)
7. Feedback reinforces content (embedded reinforcements are used)
8. Program elements match direct experiences
9. Content is free from gender bias
10. Content is free from ethnic bias
11. A child's ideas can be incorporated into the program
12. The program comes with strategies to extend the learning
13. There is a sufficient amount of content

V. Entertaining (Is this program fun to use?)
1. The program is enjoyable to use
2. Graphics are meaningful and enjoyed by children
3. This program is appealing to a wide audience
4. Children return to this program time after time
5. Random generation techniques are employed in the design
6. Speech and sounds are meaningful to children
7. Challenge is fluid, or a child can select own level
8. The program is responsive to a child's actions
9. The theme of the program is meaningful to children

VI. Design Features (How "smart" is this program?)
1. The program has speech capacity
2. Has printing capacity
3. Keeps records of child's work
4. "Branches" automatically: challenge level is fluid
5. A child's ideas can be incorporated into the program
6. Sound can be toggled or adjusted
7. Feedback is customised in some way to the individual child
8. Program keeps a history of the child's use over a period of time
9. Teacher/parent options are easy to find and use

VII. Value (How much does it cost vs. what it does? Is it worth it?)
Considering the factors rated above, and the average retail price of software (US$44.00), rate this program's relative value considering the current software market. Consider also any extra hardware attachments required to get full potential of the programming, e.g., a sound card, CD-ROM, etc.

<table>
<thead>
<tr>
<th></th>
<th>Poor</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Good</th>
</tr>
</thead>
</table>

Through the application of evaluation rubrics, the California Instructional Technology Clearinghouse have reviewed and categorised over 2,000 curricular resource software titles into a searchable database. Their evaluation is also divided into five broad sections, but in a much more pedagogical approach. The California Instructional Technology Clearinghouse provides for three levels of grading: makes an excellent case for recommendation; makes an good case for recommendation; makes an minimal case for recommendation.
recommendation. This approach seems to be a rather quantitative approach, through the use of a checklist. The following table is derived from these rubrics.

<table>
<thead>
<tr>
<th>CURRICULUM CONTENT</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Curriculum content</td>
<td>The program covers the content recommended in instructional</td>
</tr>
<tr>
<td></td>
<td>resources evaluation instruments, curriculum frameworks, and</td>
</tr>
<tr>
<td></td>
<td>content and performance standards.</td>
</tr>
<tr>
<td>Legal compliance</td>
<td>The program meets the Standards for Evaluation of Instructional</td>
</tr>
<tr>
<td></td>
<td>Materials with Respect to Social Content:</td>
</tr>
<tr>
<td></td>
<td><strong>MALE/FEMALE ROLES</strong></td>
</tr>
<tr>
<td></td>
<td>• No demeaning labels or role stereotyping.</td>
</tr>
<tr>
<td></td>
<td>• Equal illustrations of male/female figures.</td>
</tr>
<tr>
<td></td>
<td>• Equal portrayal in occupations and range of career opportunities.</td>
</tr>
<tr>
<td></td>
<td>• Equal presentation of male/female contributions and achievements.</td>
</tr>
<tr>
<td></td>
<td>• Equal representation of males/females in mental and physical activities.</td>
</tr>
<tr>
<td></td>
<td>• Balance of traditional and non-traditional roles.</td>
</tr>
<tr>
<td></td>
<td>• Equal representation of similar emotions in males/females (i.e., fear, aggression, tenderness, etc.).</td>
</tr>
<tr>
<td></td>
<td>• Neutral language (i.e., people, persons, men and women, they) preferred.</td>
</tr>
<tr>
<td></td>
<td><strong>ETHNIC AND CULTURAL GROUPS</strong></td>
</tr>
<tr>
<td></td>
<td>• No demeaning labels or role stereotyping.</td>
</tr>
<tr>
<td></td>
<td>• Displays a fair proportion of diverse ethnic groups.</td>
</tr>
<tr>
<td></td>
<td>• Differences in customs must not be depicted as undesirable.</td>
</tr>
<tr>
<td></td>
<td>• Displays minorities in professions.</td>
</tr>
<tr>
<td></td>
<td>• Shows name socioeconomic ranges for different groups.</td>
</tr>
<tr>
<td></td>
<td>• Presents minority contributions and achievements.</td>
</tr>
<tr>
<td></td>
<td>• Equal representation of mentally active, creative roles.</td>
</tr>
<tr>
<td></td>
<td>• Balance of traditional and non-traditional roles.</td>
</tr>
<tr>
<td></td>
<td>• Depiction not limited to root culture, but also mainstream of group in the country.</td>
</tr>
<tr>
<td></td>
<td><strong>OLDER PERSONS AND THE AGING PROCESS</strong></td>
</tr>
<tr>
<td></td>
<td>• No demeaning labels or stereotyping of older persons.</td>
</tr>
<tr>
<td></td>
<td>• Displays balanced representation of disabled persons with persons of all ages in mental and physical activities.</td>
</tr>
<tr>
<td></td>
<td>• When appropriate, aging pictured as continuous process spanning entire lifetime.</td>
</tr>
<tr>
<td></td>
<td><strong>DISABLED PERSONS</strong></td>
</tr>
<tr>
<td></td>
<td>• No demeaning labels or stereotyping of disabled persons.</td>
</tr>
<tr>
<td></td>
<td>• Displays balanced representation of disabled persons when illustrating human activities.</td>
</tr>
<tr>
<td></td>
<td>• Balanced presentation of disabled persons with persons of all ages in mental and physical activities.</td>
</tr>
<tr>
<td></td>
<td>• Emotions depicted randomly among characters regardless of ability or disability.</td>
</tr>
<tr>
<td></td>
<td>• Contributions and achievements of disabled persons depicted, especially when biographies are presented.</td>
</tr>
<tr>
<td></td>
<td><strong>ENTREPRENEUR AND LABOR</strong></td>
</tr>
<tr>
<td></td>
<td>• No demeaning or stereotyping of occupations or vocations.</td>
</tr>
<tr>
<td></td>
<td>• Where appropriate, reference is made to role of both entrepreneur and labor in development of the country.</td>
</tr>
</tbody>
</table>

Selecting Software for Curricular Resources
**RELIGION**
- No religious practice or belief ridiculed.
- Religion, when presented, is presented in objective, non-indoctrinating manner.
- Religious diversity reflected in portrayals of contemporary society.

**ECOLOGY AND ENVIRONMENT**
- Interdependence of people and their environment portrayed.
- Appropriate responsibilities of people for creating and maintaining healthful environment portrayed.
- Wise use of human and physical resources encouraged.

**DANGEROUS SUBSTANCES**
- Use of dangerous substances not glamorised.
- Hazards of use of tobacco, alcohol, narcotics, and restricted dangerous drugs.

**THRIFT, FIRE PREVENTION, AND HUMANE TREATMENT**
- Waste discouraged.
- Practices constituting fire hazards not condoned or encouraged.
- Inhumane treatment not condoned or encouraged.
- Thrift encouraged.
- Fire prevention explained and encouraged.
- Humane treatment encouraged.

**BRAND NAMES AND CORPORATE LOGOS**
- Omit illustrations unless necessary to educational purpose or incidental to scene of general nature.
- No prominent use of any one depiction.
- Refer to soft drinks generically.
- If “fast food” restaurants necessary, use several.
- Recreational areas may be mentioned when part of contemporary childhood culture.
- Inclusion of corporate names necessary only in very narrow context.
- Automotive names may be used if fair sampling of different names appear.

**DIET AND EXERCISE**
- Emphasises foods of high nutritive value.
- Emphasises the value of regular exercise.

<table>
<thead>
<tr>
<th>INSTRUCTIONAL DESIGN FOR LEARNERS</th>
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<tbody>
<tr>
<td>Creative teaching and learning</td>
</tr>
<tr>
<td>Embedded in the program are a variety of creative teaching and learning approaches:</td>
</tr>
<tr>
<td>- constructivist experiences</td>
</tr>
<tr>
<td>- cooperative learning groups</td>
</tr>
<tr>
<td>- collaboration with other learners via a network or the Internet</td>
</tr>
<tr>
<td>- strategies to engage multiple intelligences and a variety of learning styles, e.g., visual, auditory, or kinesthetic</td>
</tr>
<tr>
<td>- independent investigations</td>
</tr>
<tr>
<td>- open-ended questioning</td>
</tr>
<tr>
<td>- strategies to stimulate student creativity</td>
</tr>
</tbody>
</table>
| Critical thinking | Embedded in the program are extensive critical thinking and decision making activities:  
- learners are directed specifically to generalise and draw conclusions or inferences and to apply these to new learning experiences  
- specific activities engage multiple intelligences for a variety of approaches to meeting program objectives  
- program environment and activities encourage learners to analyse problems and generate multiple solutions |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Information literacy | The program directs and encourages learners to locate, evaluate, and use a wide range of print, non-print, and online resources for varied and meaningful purposes:  
- specific strategies and examples assist learners in evaluating information for accuracy and for relevance to their goals  
- primary source materials are available in print and/or as links to materials on disk or online  
- learners compare and contrast multiple points of view for complex social, political, and ethical issues |
| Perspective | The program portrays people and cultures without stereotypes:  
- a variety of positive examples from many cultures promote multicultural appreciation and understanding  
- the learner identifies bias through activities, questioning, and other strategies  
- non-traditional career roles are presented |
| English learners | The program provides strong support for English learners:  
- sound, read-aloud text, colour images, or other devices help the learner to derive maximum meaning from the program  
- language acquisition stages are specified  
- positive cross-cultural interactions are encouraged  
- learner’s own primary language and culture are validated  
- all materials are presented in one or more languages other than English and the learner can move easily from one language to another |
| Challenged learners | The program addresses a variety of learners’ special needs in specific and useful ways:  
- hearing impaired (text and/or closed-caption option)  
- partially sighted (variable print size or audio enhancement)  
- assistive technologies as appropriate  
- such features are explained fully and documented, e.g., a script for any closed captioning is provided |
| PROGRAM DESIGN | |
| Interactive strategies | Interactive strategies are very effective and are clearly intuitive so that learners can focus on the instructional concepts rather than being distracted by the mechanics of program operation:
- icons, navigational commands, maps, or other prompts are easy to use, consistent, and offer options for subsequent choices at each step
- learners can review content and correct responses at their will
- presentation branches to harder or easier content and/or alters program in other ways based on learner response
- assistance, suggested solutions, alternative approaches to program content, or other help is provided in response to learner error
- as appropriate, items answered incorrectly are repeated later in the program and/or additional similar problems are posed
- learners can click on key terms for assistance to hear the pronunciation of a word and/or see a definition when appropriate |
| Motivation | Program design motivates learners to use the program repeatedly to complete or extend their work. Learners want to share it with others. |
| Customising features | Program content and features can be customised easily by the teacher or learner:
- program modules allow the selection of concepts and/or the sequencing of the presentation
- multiple levels of difficulty may be selected by the learner or pre-set by the teacher
- instructions can be edited
- features set by the teacher cannot be changed by students |
| Online access | As appropriate, there are suggestions and techniques for online access:
- resources are provided for the teacher to help facilitate the development of student products to be shared online
- a web site is available for sharing students' projects/products
- an online conference, newsletter, or web site offers opportunity for teachers to share experiences in using the program and suggestions for classroom activities
- learner access to online sites for which a fee is charged can be controlled by the teacher |
| Skill-building programs | Skill-building programs involve learners in activities substantially beyond traditional drill and practice formats:
- learners can formulate strategies and make connections between the skills being developed and the application of these skills to critical thinking
- additional practice with concepts to be mastered is provided through interesting and challenging activities, e.g., at-home activities that involve parents |
| ASSESSMENT | The program has a comprehensive assessment component and/or classroom management system that clearly addresses program content and provides such features as:
- pretest or placement for entry
- ability to individualise a path of instruction, overriding program diagnostics as needed
- clear feedback to the student regarding right and wrong answers
- branching in response to student performance
- a variety of methods to chart student progress, including |

Selecting Software for Curricular Resources
Assessment strategies

Performance assessment strategies are well-designed, simple to implement, and meet a wide range of instructional reporting needs. Any record-keeping assessment components, e.g., journals, portfolios, or placement tests, are easy to set up and operate, and will accept any number of students and classes.

INSTRUCTIONAL SUPPORT MATERIALS

Presentation and organization

Instructional support materials are appropriate to program objectives, very well-written, effectively indexed, and attractive. They can be useful to teachers and learners, and have the potential of saving the teacher a significant amount of preparation time.

Support materials

Instructional support materials are provided, as needed, in print and/or as printable files from disk or online sources:

- specific instructional objectives and activities for each grade level and curriculum area for which the program is recommended
- ideas for correlation with other materials
- strategies for use with a diverse student population, with individual or collaborative groups, and with learners of different ability levels
- management strategies for varied settings
- representative screens of program segments
- transparency masters, posters, maps, big books, manipulatives, templates, etc.
- clear estimation of time needed
- list of any needed prerequisites or skills
- URL/e-mail addresses for more resources
- results of classroom field testing

The California Instructional Technology Clearinghouse also has supplementary rubrics for evaluating Distance Learning Resources, Online Learning Experiences, Presentation Tools, Reference Tools and Productivity Tools, which are to be used in conjunction with the previous rubrics. The following table has been derived from these rubrics.

DISTANCE LEARNING RESOURCES

Delivery of instruction

The distance learning technology is a very effective vehicle for delivering instruction:

- the distance learning technology is easy to use
- the distance learning programs are widely accessible through a variety of delivery systems, e.g., cable, satellite, television, etc.
- production qualities meet professional standards
- live, interactive programs are delivered on time and as scheduled
- scheduling and program information is available to participants at least three months in advance

Interaction among learners and with staff

The distance learning technology significantly enhances the learning experience:

- interaction between studio instructor and audience is supported through a variety of technologies
- interaction among learners at the various sites, both online and off-line, is facilitated as appropriate
- a support staff is available before, during, and following the telecast to address technical difficulties
- support staff is available to address both content and technical questions


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<thead>
<tr>
<th>ONLINE LEARNING EXPERIENCES</th>
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<tbody>
<tr>
<td><strong>Online collaboration and communication</strong></td>
<td>The online resource facilitates many unique collaborations and increased understanding through the use of online communications, e-mail, CU-SeeMe, etc. Interactive virtual field trips, online mentors or experts, inter-school collaboration, and/or cross-classroom projects can link students of different ages, abilities, or cultures.</td>
</tr>
<tr>
<td><strong>Navigation</strong></td>
<td>The online resource is designed to facilitate navigation by providing easy access and user control, multiple entry points, clicking to read additional text, non-linear access to all segments, easy return to previous sections, a clear hierarchy of page structure, and a visual locator for navigation through the program. A searchable, comprehensive index and site directory are available.</td>
</tr>
<tr>
<td><strong>Informational content</strong></td>
<td>There is significant depth and richness to the information contained at the site; it is not superficial. Any sites which are linked directly to the online source are appropriate and of high quality. There are links to primary source materials that enhance and validate student learning and, as appropriate, links to alternative pages and/or sites for English learners. Graphics enhance contextual understanding and reinforce the basic instructional design of the site.</td>
</tr>
</tbody>
</table>
| **Sharing of learners’ work** | The online resource facilitates learners' sharing of their work:  
  - there is support for the development of a variety of student projects including use of students' primary languages  
  - there are templates or forms to use in creating projects  
  - online data collection forms are available |
| **Stability and reliability** | The online resource is stable and reliable. A reliable authority is cited for all information, e.g., author, institutions, agency, publisher, etc. The online resource is maintained so that time-sensitive sites remain current. When appropriate, multiple points of view are presented and/or there are links to other sites representing alternative points of view. |
| **New web features** | The online resource makes effective use of currently available web features to increase the learning experience, rather than simply to adorn the site with the latest technology. To conserve bandwidth use for the client, large files maybe provided as thumbnail graphics, downloadable items, via CD, or in a text-only option. The site identifies and has pointers to online sources or automatic installers for extensions and utilities that are needed. |
| **Instructional support** | The online resource provides instructional support such as:  
  - templates of instructional support materials to create customised lesson plans  
  - materials and suggestions for off-line extensions of the program  
  - access to other online resources  
  - strategies for addressing a diverse student population  
  - links to sites with strategies to meet individual student needs according to their ability level, language, gender, etc.  
  - a sampling of student content and performance assessment criteria  
  - templates of newsletters and other appropriate message forms for communication between the home and the school  
  - articles focused on the pedagogy or philosophy about why the online medium is especially good for the proposed use |
**PRESENTATION TOOLS**

**Presentations features**
The program provides extensive features to support the easy creation of effective presentations:
- well-developed pre-programmed sequences to help beginning learners
- well-developed, educationally-sound sample sequences for teacher use are available
- storyboard forms are available in print or on disk
- there are guides to help in creating scripts
- audio segments can be separated from video images when creating presentations or projects
- instructions are available for making a videocassette copy of a segment from a videodisc for classroom presentation when permission is granted by the producer
- video and/or computer overlays can be created for presentations as appropriate

**Indexing**
The program provides computer-controlled indexing for rapidly accessing any individual frame, chapter stop, time, audio sequence, motion sequence, or other instructional segment when the product is used on recommended hardware components:
- there is appropriate choice of barcoding, remote control, computer, or other access technology
- a directory to the contents of the entire disk is easily accessible

**Authoring capability**
Program authoring capability provides the learner or teacher extensive options:
- local authoring software can be used to create presentations
- the learner or teacher can control the presentation from the program disk, save the material for future presentations, and play the presentation on machines without the proprietary software
- varied levels of use can range from simple, frame-by-frame access to the creation of sophisticated individualised instructional units
- the presentation can easily incorporate videos, sound, stills, and other images from a variety of sources into their projects
- the learner can create screen overlays
- program structure allows both linear and non-linear presentation of materials

**Media integration**
The program provides extensive features to integrate learning materials and student products from a variety of sources such as:
- original student work including written work, artwork, or oral presentations
- electronic sources including Internet, CD-ROM, videogisc, video cameras, scanners, or audio cassettes
- program-supplied graphics, sound, or video resources

**REFERENCE TOOLS**

**Search strategies**
Search strategies are so well designed that a new searcher can begin using the program effectively in two to five minutes:
- browse, menu, and command search modes are available as appropriate
- keyword searching, including searching of multi-word phrases, true Boolean searching, and/or relational search strategies are fully supported
- a scrolling thesaurus can be accessed by typing a few letters and the selected term can be highlighted for use in searching
| **Indexing** | Indexing is thorough and accurate, and provides access to all text, illustrations, sounds, etc. A list of all indexing terms is available on screen and/or in print. |
| **Ease of use** | There is easy access to online supplements, updates, or other current information. For CD-ROM tools, the search software can be installed directly from the CD-ROM. |
| **Using search results** | The user has a wide variety of easily implemented choices for displaying and using search results: |
| | • text and data can be pre-formatted and downloaded into specific applications software with simple commands and a minimum number of keystrokes |
| | • graphic images can be saved, edited, and printed |
| | • print commands are simple and will display the total number of pages before printing |
| | • an on-screen notebook is available and is designed for easy disk maintenance |
| | • the "save search" and "notebook" functions are optional |
| | • information saved in an on-screen notebook can be downloaded to a floppy disk |
| **Electronic versions of print reference tools** | An electronic reference tool based on a print edition has the complete contents of the print version including all maps and other illustrations, provides sophisticated search strategies, and has enhancements to the content, e.g., motion sequences, sound, interactive segments, etc. |
| **Periodical indexes** | The titles included in periodical indexes are very appropriate to the reading and interest levels of the user. Well-written abstracts accurately reflect the entire content of the original articles and contain essential facts and data. The full text is available on the disk or online, in print, or on microfilm at a reasonable cost. Special features include: |
| | • citation fields are labeled clearly |
| | • searches can be limited by year, date, journal title, etc. |
| | • titles available at the school can be marked |
| | • there is no requirement to return earlier versions as new disks are received |
| | • coverage is maintained when additional years are added |
| **PRODUCTIVITY TOOLS** | The tool software design provides an appropriate balance between ease of use and sophistication of program application: |
| | • an interactive tutorial offers both explanation and practice |
| | • learners can select from several levels of complexity |
| | • both pull-down menus and keyboard commands are available |
| | • pre-designed templates are available for all program options |
| **Learner activities** | Learner activities appropriate to various grade levels and curriculum areas are available and can be used to provide meaningful practice. |
| **Printing and formatting** | Printing and formatting options are varied appropriately to meet a range of learner needs. |
| **Other languages** | All program components are available in one or more languages other than English. All diacritical marks supported by the keyboard and/or printer are available to the learner. |
| **Word processing** | Word processing tools provide all standard tools and most of the following functions:
<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficient network operation and protection of individual learner's work</td>
<td></td>
</tr>
<tr>
<td>Flexible page formatting and layout</td>
<td></td>
</tr>
<tr>
<td>Access to e-mail does not interrupt program operation</td>
<td></td>
</tr>
<tr>
<td>Easily imports graphics in a variety of formats such as GIF, JPEG, etc.</td>
<td></td>
</tr>
<tr>
<td>Menus can be customised</td>
<td></td>
</tr>
<tr>
<td>Graphics can be re-sized</td>
<td></td>
</tr>
<tr>
<td>There is an HTML (hypertext markup language) option</td>
<td></td>
</tr>
</tbody>
</table>

**Database management**

- Database management tools provide all standard tools and most of the following functions:
  - Math functions for calculated fields are simple to use
  - Summaries and sub-summaries can be generated
  - Scripting (macros) is easy to design and modify
  - Data can be shared with other databases
  - Data can be shared across platforms
  - A graphics field can be used
  - Find function is simple to use and allows multiple word or Boolean searching

**Spreadsheet**

- Spreadsheet tools provide all standard tools and most of the following functions:
  - Math functions for calculated fields are simple to use
  - Assigning legends to graphs is performed easily
  - Has sample spreadsheets with graphs for student data collection, gradebook, etc.
  - Graphs are updated in real time as data changes
  - Data can be used across platforms

**Desktop publishing**

- Desktop publishing tools provide all standard tools and most of the following functions:
  - Easily imports text and graphics from other sources
  - Has pre-designed templates for common uses in the classroom
  - User-designed templates can be saved to disk
  - Includes spell-checker, grammar-checker, and thesaurus
  - Drawing tools are available
  - Allows variations in inside/outside margins, multiple pages, styles, scripts or macros, auto page, and size and orientation adjustment
  - Supports colour printing
  - Supports multiple page documents
  - Supports multiple language fonts, characters, and diacritical markings
  - There is an HTML (hypertext markup language) option

**Integrated software**

- Integrated software tools provide all or most of the features listed in the first column for word processing, database management, and spreadsheet tools as well as the following functions:
  - Program features are easy to learn and use
  - Merging data from the separate components is easily accomplished
  - Supports colour printing

**Process writing**

- Process writing tools provide features that go beyond word processing programs:
  - Includes activities for brainstorming, prewriting and organizing, writing, editing and revision, and publishing
  - Has an excellent outlining tool
  - Motivates creative writing with a variety of interesting and age-appropriate "story starters"
  - Has drawing/painting tools or can access these easily in
| **another program** | has grammar checker and thesaurus in addition to a spell checker  
|                     | provides online access that will allow learners to share their work  
|                     | supports colour printing  |
| **Keyboarding**     | Keyboarding programs provide all or most of the following features:  
|                     | an assessment component determines entry level  
|                     | clearly defined levels of instruction include tutorial, practice, progress check, review, and timed practice  
|                     | the beginning/home key component offers activities for students at varied age levels  
|                     | there are activities for teaching proper posturing and finger positioning  
|                     | interesting and varied practice materials are appropriate for each grade level for which the program is recommended  
|                     | audio and graphical enhancements are appropriate to instructional goals  
|                     | on-screen displays of learner’s speed and accuracy rates are optional  
|                     | the program can generate reports for learners, teachers and parents  |
| **Telecommunications** | Telecommunications tools provide all or most of the following features:  
|                     | user friendly instructions and documentation  
|                     | easy set-up and connections to an online service  
|                     | technical assistance and support is readily available via 24-hour technical support by live person, e-mail, FAX, and/or automated response  
|                     | adjustable settings and preferences for communication tasks  
|                     | flexible and customized page formatting and layouts  
|                     | ability to work with data received during and after communication session  
|                     | e-mail functions are selectable and can be customised  
|                     | ability to save, download, and upload files in a variety of formats  
|                     | printing capabilities online and off-line  
|                     | interactive capabilities  
|                     | works with other applications  
|                     | ability to streamline communications with macros or other applications  |
| **Web authoring**   | Web authoring tools provide all or most of the following functions:  
|                     | text and graphics on the screen appear as they will on any popular browser  
|                     | HTML (hypertext markup language) or other required codes are built into the tool as automatic functions and may be toggled for viewing  
|                     | technical assistance and support are readily available  
|                     | readily handles a variety of graphic, audio, video, and compression formats  |

**References**


