

# Technology Integration Plan Texas State Standards

Design and Typography \* Bill Lynch

The following standards were taken from the web site located at <http://lonestar.utsa.edu/efox/colleges.htm>  
Please note "No institution will be required to meet these guidelines... the Texas Higher Education Coordinating Board believes (these standards) should exist in order for these institutions to offer their students relevant education in a world increasingly dominated by information technology."

The THEC and SACS accredit the school I teach at. The technology integration plan developed with this exercise meets and/or exceeds these recommended standards.

## Colleges/Universities

Much like the secondary curriculum, colleges and universities are not required to implement technology into the math classroom, but as seen in the sections below, is being strongly encouraged. The Texas Academic Skills Program (TASP) test is required of all students entering a public college or university, with some exceptions considered.

The following information highlights:

- [The RECOMMENDED Technological minimum requirements for public colleges and universities in Texas by the Coordinating Board \(THECB\)](#)
- [TASP Objectives](#)
- [TASP Remediation Statistics and Information](#)
- [Sources](#)

## *Recommended Educational Technology Guidelines*

### AREAS

- [Application](#)
- [Educational Technology Planning](#)
- [Student Computer/Telecommunications Access](#)
- [Educational Media](#)
- [Distance Education](#)
- [Library](#)

### *Application*

The five guidelines provided below are recommended as minimum levels of educational technology appropriate to support teaching and learning on campuses of Texas public universities, community colleges, and technical colleges. No institution will be required to meet these guidelines.

These guidelines define the minimum levels of educational technology that the Texas Higher Education Coordinating Board believes should exist in order for these institutions to offer their students relevant education in a world increasingly dominated by information technology. The recommended guidelines should not be considered to be educational technology goals or an educational technology plan.

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### *Educational Technology Planning*

Each institution should have, as part of its institutional strategic plan, an educational technology plan that addresses the acquisition, use, financing, and maintenance of educational technology for teaching purposes. The institution should have a process in place for keeping the plan current as technologies develop, relative costs change, and institutional policies evolve. As a minimum, the plan should address the campus data network, the campus video distribution system, faculty and staff development, and the campus infrastructure to facilitate the use of technology to support teaching and learning. Development of the plan should involve the institution's faculty, staff, students, and administration and other persons as appropriate.

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### ***Student Computer/Telecommunications Access***

Each institution should provide general use computers or computer terminals that are available to all faculty and students enrolled at that institution. Each institution should provide faculty and students access to an external data communications network (e.g., the Internet) that provides electronic mail services and access to multiple information services. Each institution should provide a campus backbone network that links faculty, students, classrooms, support services and laboratories.

Access to campus computer and telecommunications facilities through student-owned computers should be supported. Higher levels of off-campus access to campus computer and telecommunications facilities through dial-in phone lines should be provided at campuses with high proportions of "commuter" students.

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### ***Educational Media***

Each institution should provide classroom environments that encourage faculty and students to use technology to facilitate teaching and learning. Each institution should provide teaching aids such as video and CD playback devices and facilities for providing on-line computer simulations to all instructional personnel and all academic departments. Teaching aids should be available in sufficient quantity and the distribution of this equipment should be organized in such a way that a faculty member can reasonably expect to use a given piece of equipment with 24-hour notice. Each institution should provide faculty with technical support for the development of courseware and other technology-based instructional materials. This function should be staffed with at least one full-time-equivalent person with expertise in the development of media-based instruction, and larger campuses should provide additional support for faculty members.

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### ***Distance Education***

Each institution should have a real-time capability for receiving instructional material originating off-campus over a satellite down-link and/or over a land-based video network. Each campus should have a sufficient number of classrooms equipped to receive these classes. Each institution should have policies in place that permit academic departments to use instructional material that originates off-campus and policies that allow students to receive credit for courses that use this material.

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### ***Library***

The library should provide access to databases, either on-line or using CD- ROM technology, and access to remote information. Each institution should have a computerized indexing (card catalog) system and a computerized circulation system. These systems should support electronic access by users within the library and by external users via dial-in telephone lines. These systems should be compatible with the Z39.50 electronic information services standard which provides a common user interface to diverse library systems.

*These guidelines were adopted at a regular meeting of the Texas Higher Education Coordinating Board on July 19, 1996.*

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### ***TASP Objectives***

(for the math portion of the test)

AREAS

- [Mathematics Skills Description](#)
- [Fundamental Mathematics](#)
- [Algebra](#)
- [Geometry](#)
- [Problem Solving](#)

### ***Mathematics Skill Descriptions***

The Mathematics section of the TASP Test consists of approximately 50 multiple-choice questions covering four general areas: fundamental mathematics, algebra, geometry, and problem solving. The test questions focus on a student's ability to perform mathematical operations and solve problems. Appropriate formulas are provided to help examinees perform some of the calculations required by the test questions.

*NOTE: The Mathematics skills list was revised as of September 1993. The skills were previously numbered 7–16. They are currently numbered 1–11. The skills in reading and writing were not renumbered so that diagnostic reporting in those areas would remain consistent.*

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### ***Fundamental Mathematics***

1. Solve word problems involving integers, fractions, decimals, and units of measurement. Includes solving word problems involving integers, fractions, decimals (including percents), ratios and proportions, and units of measurement and conversions (including scientific notation).
2. Solve problems involving data interpretation and analysis. Includes interpreting information from line graphs, bar graphs, pictographs, and pie charts; interpreting data from tables; recognizing appropriate graphic representations of various data; analyzing and interpreting data using measures of central tendency (mean, median, and mode); and analyzing and interpreting data using the concept of variability.

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### ***Algebra***

3. Graph numbers or number relationships. Includes identifying the graph of a given equation or a given inequality; finding the slope and/or intercepts of a given line; finding the equation of a line; and recognizing and interpreting information from the graph of a function (including direct and inverse variation).
4. Solve one- and two-variable equations. Includes finding the value of the unknown in a given one-variable equation, expressing one variable in terms of a second variable in two-variable equations, and solving systems of two equations in two variables (including graphical solutions).
5. Solve word problems involving one and two variables. Includes identifying the algebraic equivalent of a stated relationship and solving word problems involving one and two unknowns.
6. Understand operations with algebraic expressions and functional notation. Includes factoring quadratics and polynomials; performing operations on and simplifying polynomial expressions, rational expressions, and radical expressions; and applying principles of functions and functional notation.
7. Solve problems involving quadratic equations. Includes graphing quadratic functions and quadratic inequalities; solving quadratic equations using factoring, completing the square, or the quadratic formula; and solving problems involving quadratic models.

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### ***Geometry***

8. Solve problems involving geometric figures. Includes solving problems involving two-dimensional geometric figures (e.g., perimeter and area problems) and three-dimensional geometric figures (e.g., volume and surface area problems), and solving problems using the Pythagorean theorem.
9. Solve problems involving geometric concepts. Includes solving problems using principles of similarity, congruence, parallelism, and perpendicularity.

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### ***Problem Solving***

10. Apply reasoning skills. Includes drawing conclusions using inductive and deductive reasoning.
11. Solve applied problems involving a combination of mathematical skills. Includes applying combinations of mathematical skills to solve problems and to solve a series of related problems.

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### ***TASP Remediation Statistics and Information***

"In 1993-94, nearly 30 percent of freshman and sophomore students entered remediation required by either TASP Test results or locally required placement test results. In 1993-94, community and technical college students accounted for 84 percent of all students in remediation. Course-based remediation accounted for 96 percent of the remediation at community and technical colleges. At universities, course-based remediation accounted for 65 percent of remediation. At both types of institutions, noncourse-based remediation -- which involves work in something other than a classroom environment -- accounted for the remainder." (Fischer, R., 1996, paragraph 1). Those needing to be remediated often benefit from non-traditional types of learning activities. Though a computer program specifically designed to accommodate the needs of the TASP test taker was not included, many basic math programs can be used to supplement the objectives listed above. Many of the software sites listed on the [Links to Software](#) page could be useful in enhancing the skills of those students requiring remediation in mathematics.

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### ***Sources***

Fischer, R (1996, July). Texas Academic Skills Program. [Annual Report on the TASP and the Effectiveness of Remediation](#) [On-line]. Available: <http://www.theceb.state.tx.us/divisions/univ/tasp/annrpt96/>

Texas Higher Education Coordinating Board (1996, July). Recommended Educational Technology Guidelines. Retrieved April 26, 1998 from the World Wide Web:

[www.theccb.state.tx.us/divisions/planning/TECHGUID.HTM](http://www.theccb.state.tx.us/divisions/planning/TECHGUID.HTM)

Texas Higher Education Coordinating Board State Board, the State Board for Educator Certification, and National Evaluation Systems, Inc. (1997). September 1997-February 1998 TASP Test Registration Bulletin. [Bulletin].

## **Technology Integration Overall Learning Goals**

### **Design and Typography \* Bill Lynch**

#### **Gaining knowledge of the attributes of typographical letterforms.**

- Identify and describe attributes of typographical letterforms.
- Utilize font, size and character attributes of type.

#### **Gaining knowledge of type design and page layout.**

- Understand and apply proper spacing and kerning techniques.
- Design elements of page layout.
- Diagram attributes of page layout.

#### **Comprehension of path typographical design solutions for logos and advertising layouts.**

- Utilize object-oriented functions of typography.
- Create design solutions using typography exclusive of over graphic elements.
- Use drop shadows and other special typographic effects.

#### **Gaining knowledge of typography design color usage.**

- Apply standard and custom colors and patterns to type.
- Demonstrate knowledge of basic color theory and its relation to typography.
- Utilize color to provide effective typographical design solutions.

## **Technology Integration Plan Summary Statement**

**Design and Typography \* Bill Lynch \* Created 10, 2000**

### **Strategies**

The technology will be integrated into the classroom by demonstrating a relative advantage over existing teaching resources. Through example and reference the need for utilization of the computer program with supporting hardware components should be evident in the successful attainment of learning objectives in this course. The attribute manipulation and sequential design considerations of typography are greatly enhanced with vector based computer applications and typically not practiced without it.

### **Tools**

The classroom must have enough computers to accommodate the student load. Macintosh or PC formatted computers will both be acceptable provided the format chosen is exclusive in the classroom. Each student is to have access to his or her own computer workstation. These computers should have a vector based image formatting program (Adobe Illustrator) installed and ready to use. The classroom should also be equipped with an instructor computer with projector attached for demonstrations. The projection should be visible for all students. Access to a black and white (proofs) and color printer (final) must be available. It is reasonable to have only the black and white printer in the classroom, with remote color printer access. The student is to provide a back-up storage device compatible with the computer capability (Zip, Jaz, floppy, etc).

### **Pedagogical Basis**

In this course the computer is used as a tool to learn with. The computer facilitates knowledge attainment of typographical design solutions through integration of lessons and student projects. By applying learner-centered projects, the student will develop customized solutions for individual problems by utilizing the computer and applicable program. Attainment of all learning goals and outcomes is greatly facilitated by using the computer as a tool to learn with.

### **Disciplines Link**

This course would be good for anyone wanting to know more about typography and design. It is intended for post-secondary commercial art or graphic design students who are beginning the second quarter of the program specific requirements within their program. The course reinforces basic principles the student should already have been exposed to in previous quarter, such as balance, contrast and symmetry in design and basic color theory. This course allows the student to see practical applications of those foundation studies and prepares them for advanced study in design including advertising design, publication design and web design and development.

## Technology Integration Course Lesson Plans

### Design and Typography \* Bill Lynch

The intention of this four-lesson plan unit is that it is the digital typography section of a larger course for **post-secondary students** called Design and Typography. The previous sections of this course would be conducted in a non-computer studio setting. The section presented here is the **technology integration** portion of the course. The remainder of the course would include design and illustration techniques utilizing the computer program Adobe Illustrator and incorporated hand skill techniques previously discussed. It is presumed in this exercise that through previous lessons the student has built a foundation of the basic tools and techniques of using the computer. The examples provided are the final products in this section of such a course.

#### Lesson ONE

##### **Topic (Knowledge):**

Gaining knowledge of the attributes of typographical letterforms.

##### **Discussion (Comprehension):**

The instructor will explain the process for acquiring the text tool and applying type in the computer program Adobe Illustrator. Also attributes of typographical character letterforms will be discussed including: font, size, serif/sans serif, ascender/descender, stroke, uppercase/lowercase, x-height, baseline, meanline, counter, shoulder, bowl and arm.

##### **Objectives (Application):**

At the completion of this lesson the student should be able to:

- Use the text tool in Adobe Illustrator to create type.
- Identify and describe attributes of typographical letterforms.
- Adjust font, size and character attributes of type.

##### **Resources (Analysis):**

The student is to use to illustrate knowledge of the type tool by pointing out type attributes and functions by paraphrasing the usage of these functions in *Adobe Illustrator*. A *black and white copy* of the lesson and *proof* of the final design in progress will be an adequate resource for analysis of goal attainment. The student is to back up all work for finished project onto a *digital storage device*.

##### **Activity (Synthesis):**

After instructor explanation, examples and discussion, the student is to generate an example of this lesson and begin to synthesis typographical design solutions to a previously created digital illustration. The instructor will then answer questions individually and assess progress and goal attainment.

**Critique (Evaluation):**

At the end of this lesson, the instructor is to interpret individual student attainment of the objectives, provide recommendations and summarize. There will be a formal all class critique of a final project at the end of Lesson FOUR.

**(Please refer to example “project1.eps”)**

**Lesson TWO**

**Topic (Knowledge):**

Gaining knowledge of type design and page layout using Adobe Illustrator.

**Discussion (Comprehension):**

The instructor will explain and give examples of page layout including: kerning and leading, headline copy, body copy, gutters, text block, drop caps, margins, call-outs, dummies, bold and italics. Also picture plane, balance, element weight, visual comprehension and communication will be discussed.

**Objectives (Application):**

At the completion of this lesson the student should be able to:

- Apply proper spacing and kerning techniques.
- Design standard page layout.
- Diagram attributes of basic page layout.

**Resources (Analysis):**

The student is to use to illustrate knowledge of page layout by pointing out type functions and paraphrasing the usage of these functions in *Adobe Illustrator*.

A *black and white copy* of the lesson and *proof* of the final design in progress will be an adequate resource for analysis of goal attainment. The student is to back up all work for finished project onto a *digital storage device*.

**Activity (Synthesis):**

After instructor explanation, examples and discussion, the student is to generate an example of this lesson and begin to synthesis typographical design solutions to a previously created digital illustration. The instructor will then answer questions individually and assess progress and goal attainment.

**Critique (Evaluation):**

At the end of this lesson, the instructor is to interpret individual student attainment of the objectives, provide recommendations and summarize. There will be a formal all class critique of a final project at the end of Lesson FOUR.

(Please refer to example “project2.eps”)

**Lesson THREE****Topic (Knowledge):**

Customized path typographical design solutions for logos and advertising layouts using the computer program Adobe Illustrator.

**Discussion (Comprehension):**

The instructor will explain and give example for open path and closed path type usage; including; text wrap, custom paths, rotation, reflection, skew, scale, reverse type, extruding, condensing, and drop shadows. Also visual design of adjusting type on path will be discussed including; content cohesiveness, target audience/font usage, balance, symmetry, contrast and legibility.

**Objectives (Application):**

At the completion of this lesson the student should be able to:

- Use the object oriented editing tools to perform various functions on type.
- Create design solutions using typography exclusive of over graphic elements.
- Create drop shadows and other special typographic effects.

**Resources (Analysis):**

The student is to use to illustrate knowledge of path functions and effective design by paraphrasing the usage of these functions in *Adobe Illustrator*. A *black and white copy* of the lesson and *proof* of the final design in progress will be an adequate resource for analysis of goal attainment. The student is to back up all work for finished project onto a *digital storage device*.

**Activity (Synthesis):**

After instructor explanation, examples and discussion, the student is to generate an example of open/closed path and options for type and begin to synthesis custom typographical design solutions to a previously created digital illustration. The instructor will then answer questions individually and assess progress and goal attainment.

**Critique (Evaluation):**

At the end of this lesson, the instructor is to interpret individual student attainment of the objectives, provide recommendations and summarize. There will be a formal all class critique of a final project at the end of Lesson FOUR.



(Please refer to example “project3.eps”)

## Lesson FOUR

### Topic (Knowledge):

Gaining knowledge of typography design color usage.

### Discussion (Comprehension):

The instructor will explain and give examples for designing with color and type including; stroke and fill, standard and custom colors, patterns and custom fills, converting type to outline, free transform type, gradients, custom gradients and digital print calibration considerations. Also basic color theory including warm and cool color usage, design cohesiveness, impact and legibility will be discussed.

### Objectives (Application):

At the completion of this lesson the student should be able to:

- Apply standard and custom colors to type.
- Apply patterns and custom fills to type.
- Apply color to provide effective typographical design solutions.

### Resources (Analysis):

The student is to use to illustrate knowledge of color and typography by pointing out type color functions and paraphrasing the usage of these functions in *Adobe Illustrator*. A *black and white copy* of the lesson and *proof* of the final design in progress will be an adequate resource for analysis of goal attainment. The student is to back up all work for finished project onto a *digital storage device*.

### Activity (Synthesis):

After instructor explanation, examples and discussion, the student is to generate an example of color options for type and begin to synthesis color typographical design solutions to a previously created digital illustration. The instructor will then answer questions individually and assess progress and goal attainment to facilitate a successful critique.

### Critique (Evaluation):

At the end of this lesson there is to be a formal all class critique of student projects.

(Please refer to example “finalproject.eps”)

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Provided for the student will be access to a computer workstation able to accommodate the vector based image format program Adobe Illustrator. Also a black and white printer for proofs will be available and access to a color printer will be discussed for the final project. The instructor will conduct lesson examples on the instructor computer with a clearly visible projection system.

The student is to provide note-taking material for each lesson and provide a back-up storage device compatible with the computer capability (Zip, Jaz, floppy, etc). For best print results the student is encouraged, not required, to acquire high quality digital photo paper. The student is required to provide a finished mounted color copy of the final design for classroom critique. For this they will need mattboard, spray mount and black construction paper for a flap.

### **Technology Integration Summary Statement**

## **Design and Typography \* Bill Lynch**

Technology, in this case the computer program Adobe Illustrator, is the vehicle that facilitates the student's knowledge of typographical design solutions for logos, posters and advertising design layouts.

By presenting typographical design lessons in context to existing readily available digital examples the instructor will be able to lay a foundation and reference for student design development while using the computer program.

The technology in the classroom will allow the instructor to demonstrate process, terminology and technique previously learned in non-computer studio based courses. Integration of this technology at this point will reinforce basic principles and facilitate practical knowledge and creativity.

The technology will also allow the instructor to recognize and share student's various accomplishments while checking student competency attainment. As individual questions arise, the instructor can reinforce typographical design considerations to remaining student core by way of the collaborative technology tool.

Technology facilitates the constructivist learning environment by allowing the student to actively engage in individual attributes of lessons and synthesis the relationship to each other and the final project. It also assists in the comprehension of goal attainment of the student by providing visual reference of each lesson to each other and how they relate the final project.

Through application of learner centered design projects, the student will be able to apply typographical considerations and principles in unique and meaningful ways. The computer

program allows for rendering of many custom typographical solutions. It is fundamental that the successful design students demonstrate competent utilization of this technology in the production of effective type design.