Using Mindtools in Education

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Mindtools are cognitive tools such as selected computer programs that stimulate learning and thinking in students. This technology is being used in today’s schools to “teach” students in much the same way that educators “teach” students (i.e., instruct students about what they know and assess their recall and comprehension of what they were told). Mindtools in education are a set of five tools that students and teachers can use in combination with “traditional” teaching and learning methods. The combination of technology and traditional methods of teaching work great together. Thus, both teachers and students alike will be better served by programs that devote a greater percentage of instructional time to problem solving and active learning. The teacher can even use mindtools for successful assessments while adhering to standards. The following are descriptions of the five types of mindtools:

The Database Mindtool. Database management systems are nothing more than electronic filing cabinets that are easier to scan through. It’s important to remember that the goal of successfully using mindtools is to incorporate basic, creative and complex thinking skills, while using the database and its functions in conjunction with the lesson being taught to stimulate learning.

The Graph Mindtool. A picture is worth a thousand words. As teachers, we know that graphing is one of the great organizational skills in learning. Graphs and charts work well because they communicate information visually. For this reason, graphs are often used in newspapers, magazines and businesses worldwide. This mindtool can really help students see their work and what it means. Sometimes, complicated information is difficult to understand and needs an illustration. Other times, a graph or chart helps impress people by getting your point across quickly and visually. For information on how to graph using Microsoft Excel, visit www.ncsu.edu/labwrite/res/gt/gt-menu.html.
**Concept Mapping.** A student or teacher uses the semantics mindtool area of concept mapping when wanting to organize thoughts, ideas or situations. There are three popular, easy-to-use concept mapping programs: Inspiration, Kidspiration and The Brain.

**The Search Internet Mindtool.** The Internet has revolutionized the world we live, learn and teach in. Therefore, successful learning while using the search Internet mindtool in education is possible. It is of utmost importance for a student to know and explore at least 20-30 different search engines. These search engines go throughout the Web and “hit” on the search terms you enter into the box. Some of the better search engines that I recommend for educational purposes include Google, Yahoo!, AlltheWeb.com, Yahooligans.com, Dogpile.com, and AskJeevesforKids.com.

**The Visualization Mindtool.** The final mindtool that can be created by a teacher or student is visualization. With this mindtool, a complete lesson can be covered through pictures and words by using a multimedia program such as PowerPoint or by utilizing a WebQuest. This tool can be used by the teacher to complete an entire lesson, part of a lesson, or to sum up a lesson. This visualization mindtool can also employ sound and video in the creation of a lesson. While this is a hard tool to master, it is most beneficial in teaching and learning once it is done. Plus, it’s a lot of fun.

**Conclusion**
How teachers can properly assess their students while keeping standards high is a problem that will continue to be faced in the years to come. With the advent of the computer, and properly integrating the computer into a classroom setting, assessing students can now be done in a variety of ways. Assessment used to be done with paper and pencil, now those same rubrics have gone online. Students’ ease of comfort with the computer is prevalent, and that should be foremost in a teacher’s mind. When educators combine both elements (traditional methods and using technology) in their teaching, new benefits arise for the teacher and the student.

**8 Reasons for Using Mindtools in Education**

1. **Educational Reasons.** With the use of mindtools, the teacher is able to perform lower-level operations that enable the learner to devote more time to meaningful mental processes. The teacher and student provide the intelligence, not the computer. It is best to learn with the computer and not from it because more responsibility is placed on the student, who becomes a more self-reliant thinker and problem-solver. These mindtools also help students transcend mental limitations such as memory, giving them the opportunity to see their work and ask more questions.
2. **Theoretical Reasons.** Mindtools facilitate knowledge construction in which students organize and represent what they know. Mindtools also engage learners in reflective thinking, which leads to knowledge construction and the extension of constructivism. The student can then construct his or her own knowledge when building an external or sharable product such as a hypermedia computer project.

3. **Practical Reasons.** A lack of available software, cost and efficiency are reasons for using mindtools. Computer-assisted instruction materials only cover a fraction of the curricula; then, there is the cost issue. When purchasing even just a few computer-assisted instructional programs, many school districts opt out due to the great expense. The use of these mindtools is more time-efficient because less time is spent learning to use different programs.

4. **Pedagogical Criteria for Evaluating Mindtools.** All mindtool applications can be used in assessing a student's progress. Mindtools often yield many solutions and involve multiple, sometimes conflicting, criteria. Mindtools also require considerable mental effort, so the student is compelled to make elaborations and judgments.

5. **Critical Thinking Skills.** Critical thinking is the dynamic reorganization of knowledge in meaningful, usable ways. It involves making judgments, measuring against a standard, as well as assessing reliability and usefulness. When separating a whole lesson by using mindtools, a student is able to understand the relationships of the lesson (recognizing patterns, categorization and sequencing, as well as being able to identify assumptions and main ideas) and can compare, contrast, think logically, make inferences from data, identify causal relationships, and predict outcomes.

6. **Creative Thinking Skills.** Creative thinking is closely related to critical thinking. Creativity requires going beyond accepted knowledge to generate new knowledge. This involves the following mental processes: A student is able to summarize main ideas into his or her own words. Through mindtools, students can also hypothesize, process information, express ideas fluently, predict outcomes while wondering, use their intuition, and add personal meaning.

7. **Complex Thinking Skills.** Complex thinking combines the basic learning and recall of both critical thinking and creative thinking into larger processes. Using mindtools, students produce new ideas and make decisions by selecting between alternatives in a systematic way (i.e., identifying an issue, generating alternatives, assessing consequences, making choices and evaluating).
8. **Collaborative Use of Mindtools.** The use of mindtools can make better communicators and more sensitive students who are better at organizing content and clearly identifying the group goal and content domain. By using mindtools, one can delegate tasks and subtasks to individuals. Also, communication skills are made when mindtools are used. Leadership skills should be modeled by the teacher and then assigned to students. Cooperation with others (group members) can be assessed by having students share, accept, and support the needs and wants of others.

**References**


