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ABSTRACT

Teacher preparation programs have recognized their obligation to provide solutions for the dilemmas their teachers face once in the inclusive educational environment. The changing demands required by both general and special education teachers at the K-12 level are being addressed. One of these solutions is to provide access to technological innovations that help teachers meet the needs of a diverse population, complete the job quickly and efficiently, and have the ability to integrate bets practices into the interface design and lesson content. The study described in this paper was designed to contribute to the field's knowledge of the use of technology to support modifications for students with learning disabilities (LD) and behavioral and/or emotional disorders (EBD) in the general education curriculum. The process and outcomes of 30 teachers in a Special Education Master degree program using a template design system to modify lessons for LD and EBD students in a general curricular subject of science or language art was examined for efficiency, effectiveness, and appeal. Each teacher was instructed in the use of a Web-editing program (Microsoft Front Page) and Teaching-Not-Teaching (T-N-T), a Web-based lesson template. Results indicated the use of a Web-based lesson template increased the potential for special education teachers to effectively support the inclusion of students with LD and/or EBD in the general education curriculum. (Contains 18 references and 6 tables.) (AEF)

Using a Lesson Template to Integrate General and Special Education: Teaching Lesson Template Use to Educators of Students with Special Needs

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During the last 50 years, the major tenets of most educational subjects areas have undergone little change; however, the characteristics of the student population and methods of teaching the concepts have evolved. The student population has been transformed by the differing ethnic, disabled, and cultural backgrounds that have entered the educational system. The methods of teaching have been impacted by the multimedia software and hardware.

The movement of including students with disabilities in the general education curriculum, specifically students with learning disabilities (LD), behavioral and/or emotional disorders (EBD), promoted by The Individuals with Disabilities Education Act (IDEA) has created a persistent challenge for the teachers who work with them. These students may have near average or above intellectual abilities, but disengage when in the general education setting for a variety of reasons (Kauffman, 2001; Koyangi & Gaines, 1993). The tight spot special educators find themselves in is how to connect these students to the curriculum, age-appropriate peers, and teachers while still ensuring effective learning.

Even though many of these students have the intellectual power, they cannot function in the general education curriculum due to skill deficits they show in performance. These perceived intellectual gaps complicate the connection between these students and their same-age peers because of the lower level of schoolwork they appear to be doing. If they are to remain in the inclusive setting these skills must be integrated with their daily learning of new skills. They attend programs where the emphasis is on behavior management and social adjustment ahead of academics and vocational preparation (Knitzer, Steinber, & Fleisch, 1990). They are underserved (Lewis, Chard, & Scott, 1994) and placed in more restrictive environments due to the availability of adequate public school education programs (Kauffman & Lloyd, 1992). Dodge and Coie (1990) found that the strength of the bond between students with special needs and their same-age peers resulted from how competent students with special needs felt at school. This competency also influenced the students with special needs level of self-concept, self-esteem, and self-identity. That is, it is necessary to develop lessons that engage this population and allow students to perform close to grade level for their affective as well as academic success.

The demand for educational accountability by policy makers and constituents increases the pressure for general education teachers who already have onus for teaching diverse populations of students. The additional responsibility of addressing state content standards and assessment while simultaneously addressing the affective needs of these students overshadows their ability to embrace a student with special needs into their classroom. Thus, special education must focus support in the modification and accommodation of the student's academic needs in order to free the general education teacher to address their affective needs and their social inclusion.

Teacher preparation programs have recognized their obligation to provide solutions for the dilemmas their teachers face once in the inclusive educational environment. The changing demands required by both general and special education teachers at the K-12 level are being addressed. One of these solutions is to provide access to technological innovations that help teachers meet the needs of a diverse population, complete the job quickly and efficiently, and have the ability to integrate best practices into the interface design and lesson content.

The study described here was designed to contribute to the field's knowledge of the use of technology to support modifications for students with LD and EBD in the general education curriculum. The process and outcomes of thirty teachers in a Special Education Master degree program using a template design system to modify lessons for students with learning, behavioral, and/or emotional disabilities in a general education curricular subject of science or language art was examined for efficiency, effectiveness, and appeal.

The researcher applied Gagne, Briggs, and Wager's (1992) condition of learning model to teaching the template use to the special education teachers. Gagne's five identified categories of learning are verbal information, intellectual skills, cognitive strategies, motor skills, and attitudes. The Kemp instructional system design (Kemp, 1997) identifies nine elements to step teachers through developing their modified lesson using the template. The Jerrold Kemp Design Model shown in Figure 1 takes a holistic approach by considering factors in the learning environment and includes learner characteristics, subject analysis, learning objectives, teaching activities, resources

(computers, books, etc.), support services and evaluation. Gagne's categories integrate nicely with the Kemp Design model. The entire process includes the best practice of teach, assess, teach, as well as being subject to continuous revision.

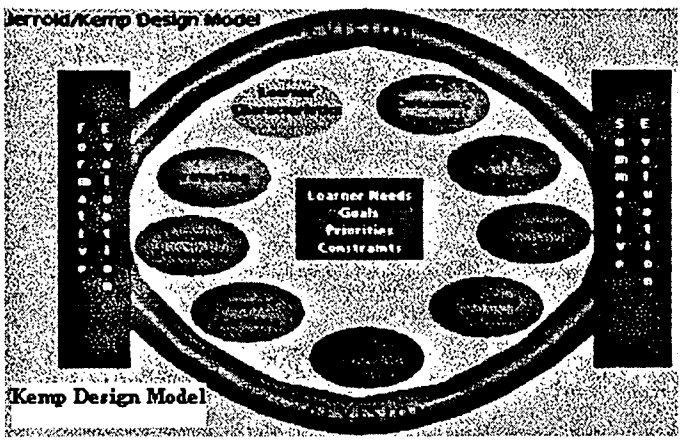


Figure 1. The Kemp ISD Model

Method

Participants

The participants in this study were 30 teachers pursuing a Masters degree for Colorado licensure in Special Education. Fifteen teachers taught in juvenile facilities and 15 taught in public schools. All 30 teachers taught at the secondary grade levels. Each of these teachers was responsible for teaching using the Colorado State Content Standards and preparing students to take the Colorado Student Assessment (CSAP). The students these teachers taught qualified for special education services in the primary categories of learning disabilities and emotional disturbances (designated in Colorado as Moderate Needs and Significantly Identifiable Emotional Disturbance (SIED), respectively). Eighteen of the master level teachers were earning general education licensure while simultaneously working under a state temporary teaching eligibility (TTE) for special education licensure. That is, 12 had a previously earned B.A. in Education while 18 did not have any previous teaching coursework and were on Emergency Teaching Licensure. In addition, all of the participants were earning the master degree in special education while teaching with a TTE. See Table 1 for details of the educational qualifications of participants.

Table 1. Teacher Education Qualifications

	Juvenile Facility Teachers (N=15)		Public School Teachers (N=15)
Teach Grades 8-10	7		0
Teach Grades 9-12	8		15
Earned B.A. in education	3	0 -- Special Education -- 1 2 – Elementary -- 5 1 -- Physical Education-- 1 Secondary (Science, 0 -- English, or Math) -- 2	9
Temporary Teaching Eligibility	15		15
Emergency Education Licensure	12		6

There were 6 males and 9 females employed in juvenile facilities and 2 males and 13 females employed in the public schools with an average age of 27 years and 31 years, respectively. See Table 2 for a participants' personal characteristics report regarding teachers' gender, age, and years of experience in teaching.

Table 2. Teacher Demographics

Juvenile Facility Teachers				*Public School Teachers*			
	Gender	Age	# of Years Teaching		Gender	Age	# of Years Teaching
1	M	24	1	1	M	23	1
2	M	26	1	2	M	26	1
3	M	28	2	3	F	26	3
4	M	30	2	4	F	26	1
5	M	33	4	5	F	29	4
6	M	35	6	6	F	30	6
7	F	25	2	7	F	30	5
8	F	26	1	8	F	26	1
9	F	27	1	9	F	26	1
10	F	29	1	10	F	27	3
11	F	31	1	11	F	28	3
12	F	31	2	12	F	29	2
13	F	31	2	13	F	30	6
14	F	32	3	14	F	32	12
15	F	35	10	15	F	32	10

Measures and Procedures

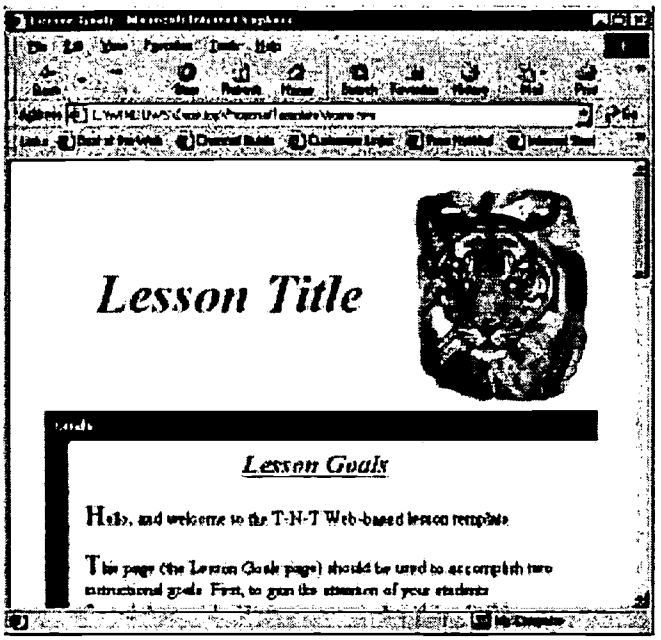
To begin the study each of the teachers were given two pre-instruments. The first assessed each teacher's level of technological sophistication and level of technophobia. Technological sophistication was measured by a researcher-developed questionnaire. The questionnaire solicited information on teachers' use of consumer technology (e.g., video-cassette recorder, automated banking, computer/video games, home care software), academic technology (e.g., word processing, programming use, library/research technology, classroom presentation packages/technology), and technology ownership. Technophobia was measured by level of computer anxiety. The Computer Anxiety Rating Scale (Form C) (CARS-C) (Rosen, Sears, & Weil, 1988) contains 20 items on a five-point scale that when scored derived a level of "no technophobia," "moderate technophobia." or "high technophobia."

The second evaluation tool examined the teachers' ability to develop lesson plans that included modifications/adaptations for students with specified characteristics of learning disabilities and emotional/behavioral disabilities. According to the Colorado State Department (CDE, 2000) special education teachers are to link state content standards to each student's IEP annual goals. Therefore, teachers were also required to include the state content standard they were addressing in their lesson plan. Teachers were in need of support that allowed flexibility. Thus, the dependent variables were (1) efficiency of the Web-based lesson template, (2) effectiveness of the template use on technical and instructional component inclusion in lesson plans, and (3) the appeal of the template use to special and general education teachers.

The training (independent variable) began with each participant being taught how to develop necessary modifications and/or adaptations to promote success of students with affective and academic disabilities on daily general education assignments and assessments. The areas of emphasis for modifications were lesson activities, required readings, and evaluations. In addition to teaching possible modifications, each teacher was taught how to write lesson goals that introduced the broad topic, learning objectives that included performance-based terms, action verbs, links to the goal, and were measurable and observable.

Each teacher was then instructed in the use of a web-editing program (Microsoft Front Page) and Teaching-Not-Teching (T-N-T) (Murry, 1998), a web-based lesson template. Each instruction period lasted 2 hours with ½ hour for questions and guided hands-on experimentation. T-N-T was designed to include each of the 7 components the teachers had been taught to use and include in a lesson plan for their students with special needs. The T-N-T template included navigation for goals, objectives, readings, activities, evaluation, glossary or chat room, and teacher e-mail link. See Figure 2 for a screen capture of the navigation found on each page of the T-N-T lesson template.

Figure 2. T-N-T Template Navigation



After selecting their topic area (Science or Language Arts) the teachers were provided time-log worksheets to track time that they spent thinking, tinkering, developing, and collecting items for their Web-based lesson. They were then instructed to begin the development of their first Web-based lesson using the steps listed below.

Step 1: Consider the learner characteristics;
Step 2: Matching characteristics to the instructional problem the lesson presented;
Step 3: Articulate what the student will accomplish in this lesson using performance-based terms;
Step 4: Write measurable goal(s) and objectives for the specific lesson using evidence from the students' Individualized Education Plan (IEP);
Step 5: Use the subject matter expert (SME) (e.g., the general education Science or Language Arts teacher) to provide ideas on materials, graphics, and other resources;
Step 6: Identify and determine which modifications and/or accommodations are necessary for success;
Step 7: Identify and collect the online readings and activities that relate back to the lesson goal(s) and objectives;
Step 8: Develop your lesson, planning the delivery and content outline;
Step 9: Develop evaluation instruction to conduct the assessment for your lesson;

Over the following 10-week period, the teachers developed 8 other Web-based lessons using Front Page and T-N-T for use with students needing parallel curriculum adaptation/modifications in the general education classroom.

A.

Results

The same battery of measurement instruments was administered to all 30 teachers before and after the training program. The performance of the teachers on the pretest and posttest measures is shown in Table 3. Mean group raw gain scores were observed on each of the lesson plan instructional and technical components (see columns 1 and 2). To determine whether the gains were educationally and statistically significant, the researchers subtracted the pretest score from the posttest score to yield a gain score. The mean gain on each component for the total sample is shown in column 3 of Table 3.

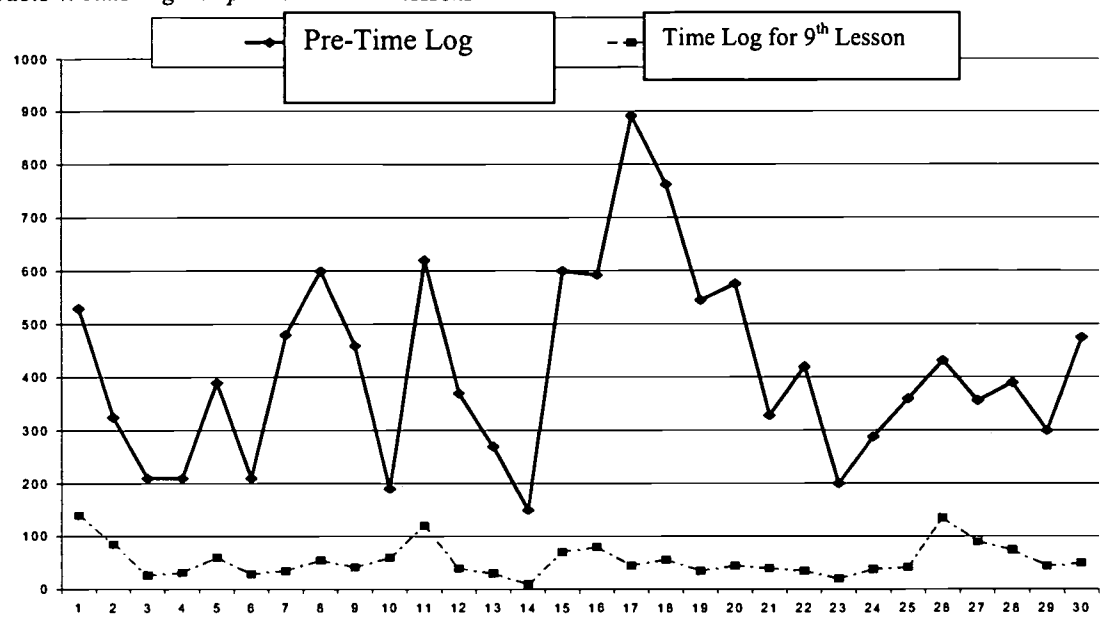
Table 3. Group Gain Scores on Dependent Variables

	Group Pretest Score	Group Posttest Score	Group Gain Score
Efficiency Lesson Development Time	347 minutes	56 minutes	291 minutes
Effectiveness Instructional (7 total) Technical (3 total)	 2.1 .5	 6.4 2.9	 4.3 2.4

Appeal			
Future Intended Use	15	27	12
Technophobia	25	8	17

The T-N-T template efficiency was defined as amount of time gained between the first Web-based lesson and the ninth lesson development. Teachers kept track of the minutes they spent thinking about content of the lesson, tinkering with Front Page and T-N-T, surfing the World Wide Web for graphics, collecting audio, video, and other resources. The average amount of time spent on the development of the first lesson was 347 minutes compared to 55 minutes on the ninth Web-based lesson. See Table 4 for a detailed comparison of each participant's development time between the first and ninth lesson.

Table 4. Time Log Comparison Between lessons



Effectiveness for the purpose of this study was defined as the inclusion and functionality of technical and instructional components in the Web-based lesson plans. The T-N-T lesson template navigation included each of the instructional components with the exception of a Content Standard link, thereby making it difficult for a teacher to ignore the need to include them. The technical components were also included in the template design; however, the lesson developer could alter the functionality. See Table 5 for pretest and posttest results of each participant's inclusion of instructional components and Table 6 for pretest and posttest results of functionality of the lesson technical components.

Table 5. Pre and Post Instructional Scores for Each Participant

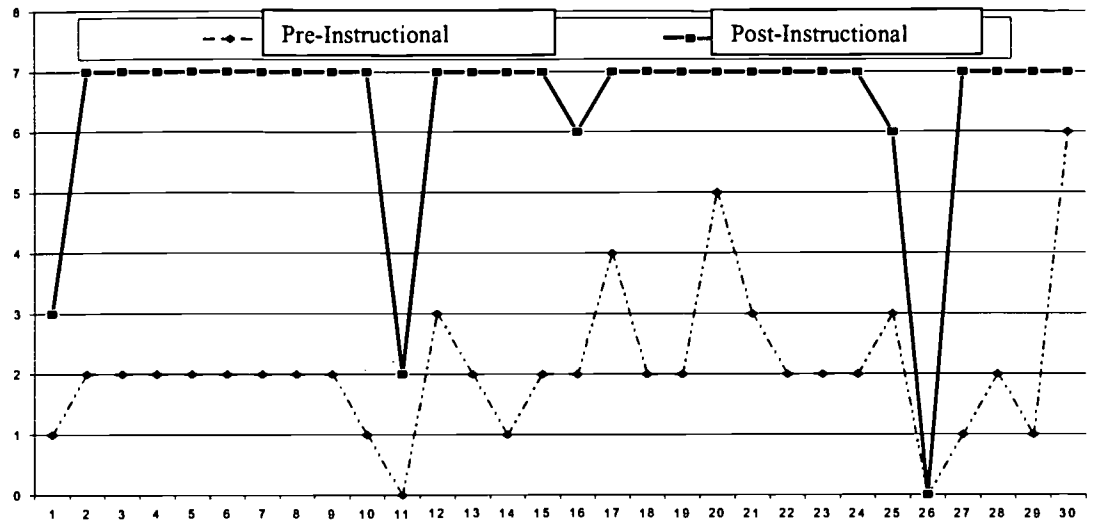
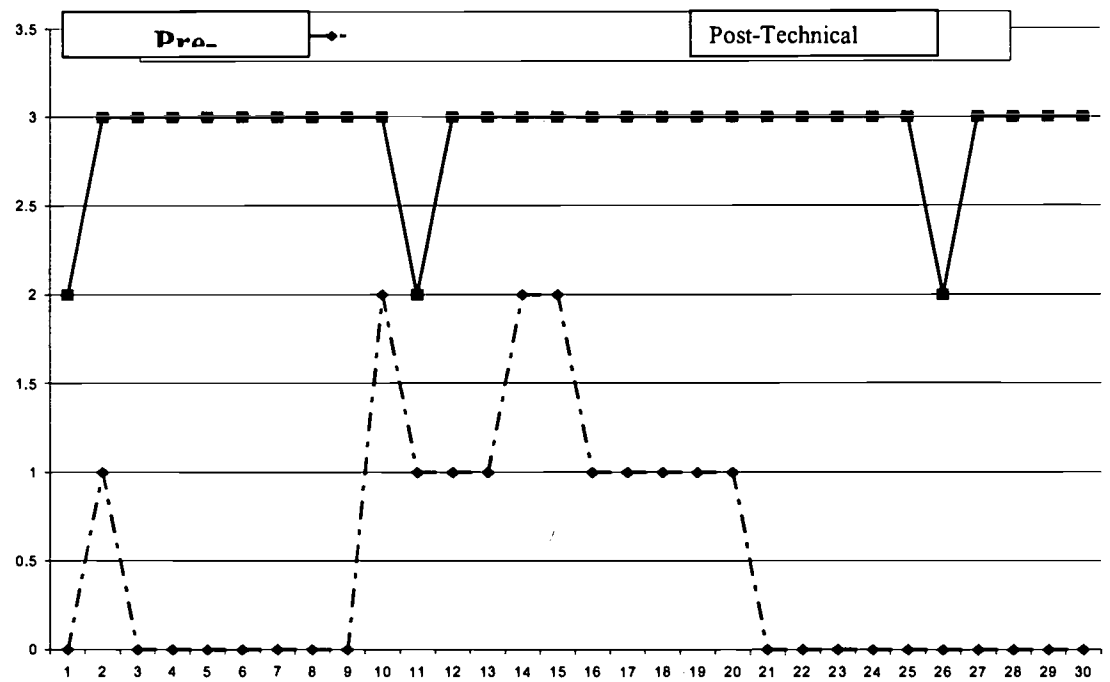


Table 6. Pre and Post Technical Scores for Each Participant



The dependent variable of appeal was characterized by the intended future use of the template by the special and general education teachers and by the change in pretest to posttest technophobia scores. The results of intended future use survey and the pretest posttest technophobia scores are reported in Tables 7 and 8, respectively.

Table 7. Pretest and Posttest use and Intended future use

	Pretest Yes N (%)	Posttest Yes N (%)
Use Web-based lesson template to adapt general education lessons for students with special needs	0 (0%)	27 (90 %)
Intend to expand the variety of technology used in my future teaching	2 (6 %)	27 (90 %)

Table 8. Pretest and Posttest Technophobia Scores

	Pretest N (%)	Posttest N (%)
High technophobia	6 (2%)	2 (.6 %)
Moderate technophobia	13 (4 %)	3 (1%)
No technophobia	11 (3.6%)	25 (8 %)

Discussion

Technophobia is a major concern in the educational arena. Technophobia has been categorized as the number one reason teachers fail to integrate technology in to the classroom. Utilization of the T-N-T template was investigated as a means to reduce technophobia to a manageable level and thereby allow teachers to integrate technology into the classroom in the form of Web-based instruction.

As a result of incorporating the use of T-N-T participant performance was substantially improved in several areas of concern. Technophobia was reduced in two categories (Moderate and High) with many students reporting moving into the No Technophobia category. Three students, who scored high in technophobia during the pre-test, showed little or no response whatever in the learning curve. The same students did not score well on the pre and post for template effectiveness, efficiency and appeal. This may have been due to attitude, age, or lack of motivation to use computer-based technologies. These students were the oldest in either of the groups.

Average lesson development time decreased from 347 minutes to 55minutes by the ninth lesson. The number of instructional strategies/components included in lessons developed by the participants increased dramatically. This increase is encouraging in that earlier teacher instructional behavior research has indicated that the discriminating factor between novice and expert teachers was that novices who did not start teaching with effective lesson development skills did not acquire them simply as a result of experience (Ayers, 1983; Housner & Griffey, 1994; Medley, 1980).

Functionality of the technical components included in the Web-based lessons developed by the participants went from 0 for many participants to the highest possible post-test score of three. The use of the template made this increase possible; however, the participants could have easily made the components nonfunctional. The fact that so many of the teachers succeeded with the template provides a solution to the findings of McCormack and Jones (1998). They found few educators possessed the required integrative ability to combine the technical knowledge and educational principles to construct effective Web-based educational environments. The template allows teachers to circumvent the necessary learning for technical technology skills while capitalizing on their emergent instructional skills.

Limitations

The researchers used the one-group pretest-posttest design in this experiment because the special education teachers were expected to provide modifications/adaptations of assignments for students in the general education classroom. The absence of a control group did not pose a serious threat to the internal validity of the experiment, however, because the researchers were able to safely assume that expected pretest-posttest gains due to extraneous factors would be minimal or nonexistent.

Conclusion

The use of a Web-based lesson template increased the potential for special education teachers to effectively support the inclusion of students with EBD and/or LD in the general education curriculum. As teachers become increasingly more efficient in Web-based lesson design they will transform education. The use of the T-N-T template will promote lessons that are derived from measurable student goals and objectives, activities that are linked to the goals and objectives, and quizzes that assess the stated learning to take place. The results of this study promote the thinking that teachers make selections based upon availability and immediate usefulness instead of applying the concepts or principles on teacher effectiveness (Guskey, Huberman, & Michael, 1995; Lortie, 1975) and will support the use of applications that enhance immediate usefulness and teacher effectiveness. It will also

encourage the use of technology for communication between teacher and students. The Office of Technology Assessment declared that technology was generally used in classrooms for low-level cognitive and instructional tasks (1995). This study refutes the very idea. "We have the potential to do great things with technology in our schools, but it is a potential still largely unrealized" (Riley, 1999, p. 9).

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