

# **Instructional Technology Analysis**

LST 401: Learning Sciences  
& Technology – Dr. Bishop

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**Description of the educational need**

The main educational need of Luddite Middle School is the lack of resources to engage their students at-risk, especially in improving their reading and comprehension skills. Students identified as being at risk of educational failure often receive a watered-down curriculum that emphasizes the acquisition of basic academic skills. However, these students must be engaged in interesting and challenging learning that goes beyond basic proficiencies. Waxman, Padron, and Arnold (2002) describe 5 practices to improve the education of at-risk students: (1) cognitively-guided instruction, (2) culturally responsive teaching, (3) technology-enriched instruction, (4) cooperative learning, and (5) instructional conversation.

This instructional technology analysis seeks to enlighten us on the current problem plaguing these students and how technology (hardware and software) can have a positive influence on students at risk of failure (Chavez, 1990).

**Description of the learning environment***About Luddite Middle School*

Luddite Middle School is situated at the heart of Miami, Florida. It has three grades, sixth, seventh, and eighth. Students at Luddite learn five subjects: Language Arts, Math, Science, Social Studies and Reading. In addition, Health and Technology classes are made compulsory. Students also take classes in related arts such as music, art, cooking and woodshop. A large majority of the 500 students attending Luddite come from the lower socio-economic class of immigrant family (namely Hispanics). About 60 percent of these students are found to be at risk of dropping out of school.

The organization of Luddite is typical of an American middle school. There are 45 teachers, five teaching assistants and one technology assistant working with the three school administrators at Luddite. Half of the teachers at Luddite are above 50 years old and display some resistance to using technology in their teaching. The other half are young teachers of two to five years of teaching experience who are keen to use technology. The older teachers feel that an effective teaching method will produce better results than a mediocre teaching method that uses technology for the sake of using technology. Some teachers are pressed for time to finish teaching the syllabus that they will ignore the creative part of using the computer and other interesting gadgets that might stimulate student's interest.

Luddite's mission statement is to *"provide our children with a balanced and well-rounded education, so as to help them discover their talents and realize their full potential, and nurture them into committed citizens."* Thus, it is vital that Luddite embark on a new strategy to engage the students at-risk by introducing a different approach to learning in a fun and innovative way through the use of technology. Luddite has recently invested heavily to bring about an IT-enabled teaching and learning environment. Each of Luddite's five computer laboratories is equipped with the latest range of computers (both PCs and Macintosh), network and Internet services, projectors, printers, scanners, digital cameras and other devices. In addition, all teachers are now given a laptop to help them prepare for their lessons. Therefore, the only financial resources needed would be the purchasing of software that will engage this group of students at risk.

## **Audience Analysis**

The targeted audience is the students placed “at risk”. Conditions associated with being at-risk include coming from poor families with ethnic and linguistic minority backgrounds, having parents who are not high school graduates, and having negative self-perceptions (Druian & Butler, 1987). These students experience a significant mismatch between their circumstances and needs, and the capacity or willingness of the school to accept, accommodate, and respond to them in a manner that supports and enables their maximum social, emotional, and intellectual growth and development. At-risk learners are likely to be low achieving, educationally disadvantaged, academically under-prepared, and have “behavior problems” or learning disabilities (Land & Legters, 2002). As many as 45 students drop out of Luddite every year. Hence, we must try to reduce the degree of mismatch and allow these students to complete their secondary education so that they have the knowledge, skills, and dispositions necessary to be successful in the next stage of their lives; either to pursue post-secondary education, training, or meaningful employment.

### *Analysis of their strengths*

These students are very resilient. As they come from struggling low-income families, some of them are determined to work hard as not to “remain poor.” But the diligent ones are often influenced by the mainstream, and they ended up rebelling just like the rest to avoid being ostracized. There are a few seemingly gifted students but their intelligence is not discovered and polished to its potential. Most of these students are talented, often displaying flair in music, drama and artistic expressions.

*Analysis of their weaknesses*

These students feel that they do not “belong” at school. They are either very quiet (withdrawn) or exhibit disruptive behavior and rebellious attitudes (they have difficulty relating to authority figures or structured situations). Most of them have a low level of self-esteem and have low achievement test scores. They exhibit language difficulties, have poor home–school communications and are frequently absent or tardy. The highest request for health referrals comes from this group of students. They are invisible dropouts (present in body but not in mind) who have short attention span.

*Strategies:*

1. In order to overcome these learners’ reading problems, technology should be able to engage them through the usage of interactive software.
2. In order to capitalize on these learners’ artistic flairs, technology should engage them in expressing their artistic talents.
3. In order to boost these students’ self-esteem (and indirectly improve their learning), technology must empower them and allow them to experience success in accomplishing or completing a certain task.

**Technology Analysis****1. *Instant messenger***

<http://get.live.com/messenger/overview>

Instant Messenger or IM is the latest technology in instantaneous communication that appeals to youth. Besides being able to chat online with friends, there are several functions that

students can use. The Photo Album is a useful tool where they can post and share photos online. Students can use the File Transfer feature where they can send attachment files (up to 100MB) for real-time sharing. Some Web Messengers also allow users to speak to other users for free. Users can call telephone numbers, receive calls from phones and receive voicemail messages. Examples of IM are Yahoo Messenger, Live Messenger and Skype.

The *constructivist model* work through the IM. Here, students take an active role in their learning. The role of the learner is shifted from being a passive to an active one when students participate in discussing current affairs or anything under the broad themes and guidelines set by the teacher. Students at-risk benefit from the *instructional conversation* that aids their learning.

#### *Pros*

The IM is a free software that can be downloaded onto any computer. It is bug-free (so far) and is user-friendly.

#### *Cons*

The IM can only be used when one is connected to the Internet. Other users must also be online or log-on at the same time for communication to take place. Offline users can, however, get chat messages left for them the next time they login.

#### *Overall evaluation*

IM is an excellent tool enabling students to communicate with each other. Even though there is no face-to-face interaction, students will benefit from the anonymity and are hence free

to express their thoughts and opinions. This will allow at-risk students to come out from their withdrawn behavior and participate actively. However, teachers should set ground rules for the chat (no vulgar language, no insensitive or insulting remarks should be made) to ensure that all users will have an enjoyable time. Students can also improve their reading, and “writing” skills when they use the IM. The teacher must be prudent and request that students use proper language and orthography; and not Internet slangs that are incomprehensible.

## ***2. Inspiration***

<http://www.inspiration.com/productinfo/inspiration/index.cfm>

Inspiration is software that allows students to plan, research and complete projects. The software is inspired by the mind mapping study technique where students utilize the mind's ability to understand and remember visual information. The integrated Diagram and Outline Views allow students to create graphic organizers and expand topics into writing (students learn in multiple modes). As a result, students gain and retain a better understanding of concepts and demonstrate knowledge, thus improving their performance across the curriculum. There is an expanded selection of more than 120 cross-curricular templates in language arts, science and social studies.

Inspiration allows students at-risk to be creative when they use graphic organizers (a core element of visual learning) to analyze, compare and evaluate information. They are able to work in teams to brainstorm which images to use when representing a concept and linking symbols. At-risk students can be more active, strategic learners when they develop metacognition.

Cooperative learning also allows these students to share responsibility for learning when they work together in small groups to improve their Inspiration maps.

### *Pros*

Inspiration software is compatible with PC, Macintosh and handhelds. The software is also believed to be able to help teachers address the requirements of No Child Left Behind.

### *Cons*

Students might be carried away with the attractive visuals and spend more time than necessary to beautify their maps.

### *Overall evaluation*

Inspiration is an extension of the Mind Manager software. Its visual nature allows a better grasp of the subject at hand and retention of knowledge. The software has been tried and tested by many schools that claimed that it enabled students to improve their test scores, learn new skills and create award-winning projects.

### **3. iMovie**

<http://www.apple.com/ilife/imovie/>

iMovie by Apple is a movie-making software that enables students to turn home movies into Hollywood-style movies. Students can choose from the many specially designed templates that will give their movie a personality. Video and graphic overlays and advanced transitions are part of the software. Students just need to drag-and-drop their movie clips and photos into the

scene's drop zones. iMovie also allows students to compose their own tunes using Garage Band (if they prefer not to use the original Garage Band songs). Students can also create video podcasts, complete with chapter markers and live URLs.

Research has shown that the video is an especially appropriate medium for the at-risk student because it produces positive attitudes toward learning, and contribute to the success of low achievers (Hancock, 1992). Most of at-risk students are tactile/kinesthetic, and tend to need high-interest materials that involve them emotionally. Hence, they respond well to videos and films (Carbo, 1997).

### *Pros*

iMovie is fairly simple software to use, although an initial demonstration should be given to students for better understanding of the various functions.

### *Cons*

iMovie is only applicable on a Macintosh.

### *Overall evaluation*

iMovie is a good tool that encourages at-risk students to explore the software and this will eventually promote discovery. It also encourages creativity. Students can create their own interfaces, compose their own music and even learn how to storyboard. The hands-on approach will encourage deep reasoning and decision-making. Upon seeing the finished product, at-risk

students will attain a sense of accomplishment and success. iMovie empowers them and gives them the confidence to create and design a video they are proud to call their own.

#### ***4. The Coolien Challenge, Youth Violence Prevention***

<http://www.compu-teach.com>

“The Coolien Challenge” is an interactive product that helps students learn how to resolve their everyday school conflicts in a non-violent constructive way. There are different scenarios of realistic confrontations in the software. Students watching those videos can try out different responses to antagonists to learn conflict avoidance behaviors. According to a survey conducted by Compu-teach, the company that created “The Coolien Challenge,” students found the directions easy to follow, the activities were fun, and they learned violence prevention skills from the program. This program was supported and funded by a grant from the National Institute for Mental Health.

According to Means (1997), strategies that use technology to teach “real world applications” will support at-risks students. Hence, “The Coolien Challenge” is a good software that addresses the basic problems-causing violence where students learn how to deal with their own anger without hurting themselves or others. Although students with higher levels of aggression-related behavior problems spent more time using the program than less violence-prone students, the program allows different groups of students to come up with different ideas and things to discuss.

*Pros*

“The Coolien Challenge” operates on the PC and Macintosh platforms. Real scenarios are acted and incorporated together with graphics and animation, making the program visually enhancing to the students taking up “the Challenge.”

*Cons*

The software is limited only to conflict resolution methods and scenarios. The program is focused and does not involve other topics.

*Overall evaluation*

Students at-risk are more exposed to aggressive behavior in their daily life. The software will teach them good conflict resolution skills and other soft skills such as how to interact with others. Through the software, students at-risk will be more alert to real-life choices they make and the consequences of those choices. The program prompts students to think about how their behaviors affect other people. True to Praeger (1993), it is the students themselves who should provide the solutions and the “The Coolien Challenge” allows them just that.

**5. *The AceReader***

<http://www.acereader.com>

AceReader is essentially a Reading Improvement Software. It can be used to: (1) assess student’s current reading level; (2) improve student’s reading speed and comprehension, both online and offline; and (3) help student read faster while on the computer, by utilizing special display modes. Students can use the AceReader to read and skim text rapidly from a variety of

documents and from the clipboard. The clipboard allows students to import text from other applications, such as the word processor and text from the Internet. Students can also adjust (1) speed of text presentation, (2) font color, (3) font size, (4) background color, (5) number of words or lines, (6) delays, and much more.

The AceReader uses technology that does the teaching. Its computer assisted instruction and integrated learning environments allow at-risk students to learn faster. In fact, Boyd (2000) found that self-paced, computer-based reading instruction helped to increase middle school students' independent reading styles.

### *Pros*

The AceReader supports the international ASCII character set (i.e. English, Spanish, German, French, Italian, etc.). It also is dyslexia friendly – dyslexic students can read by viewing one or a few words at a time.

### *Cons*

The visual interface of the software is dull and appeared outdated for today's sophisticated students.

### *Overall evaluation*

The software is among one of the best reading software available in the market. In fact, it has won several awards such as the Winner of the 2005 SIAF Peoples Choice Award. The

various functions of the software made it versatile and accessible to both at-risk students and dyslexic students.

### **Final Recommendations and Rationale**

In view of the limited budget given to purchase new educational software, it might be wise to purchase one product (for the time being) and install one free product.

The software worth investing in is the Inspiration software. This multi-functional software is compatible with all platforms. As highlighted earlier, besides enhancing students' retention of knowledge, the visually stimulating software allows cooperative learning, and peer tutoring, all essential factors in motivating at risk students. Furthermore, students receiving computer-based instruction had higher exams scores than those taught by conventional methods (Kulik & Kulik, 1991).

We should also encourage teachers to use the IM software that can be downloaded free of charge. Teachers need to guide at-risk students in using the IM and lay some ground rules respecting the individual's privacy so that no verbal abuse will occur during the chat. As discussed earlier, IM does have its merits in encouraging students to express their opinions in issues as well as aid in the at-risk students' reading and writing skills. Teachers need to be vigilant and encourage students to only use proper grammar while chatting. The use of Internet jargons and slangs should be "banned" from the IM chat sessions.

## **Implementation Plan**

Teachers, administrators, and parents must shed their idea of traditional concepts of education where the teacher is a dispenser of knowledge and right answers; and that he is autonomous in the classroom. We must not believe that at-risk students are deficient and need slow, deliberate, skills-based instruction. Given the right technological tools and a shift of paradigm, we will be able to motivate at-risk students and engage them in meaningful learning.

As all the infrastructure has been laid down in Luddite, we now need to embark on a rigorous teacher re-education towards technology and encourage them to learn more about the software. Ideas on how to integrate the software in the lessons can be generated from brainstorming sessions that can be held during staff meeting. Teachers must also be encouraged to share their lesson ideas and success stories.

At-risk students must be allowed to come up with ideas on how they want to use those software during lessons. We need to empower them to take a more active role in their learning. Only then, can the implementation plan be successful.

However, we must be wary of potential workarounds such as the abuse of the software. This potential hazard can be minimized by making sure that all involved are clear about the ground rules and operating instructions when using those software.

Once the at-risk students are able to see the benefits of learning using technological tools and software, they will not likely drop out of school. After all, they can now “play” in class.

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