

## **Improving Severely Emotionally Disabled and At-Risk High School Students Performance through Hands-on Technological Courses**

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### **Abstract**

Current curriculum and learning methods in most high schools do not provide an adequate environment for Emotionally Disabled (SED) & At-Risk students. The high drop rate from high school and the scarce employment opportunities attribute to financial and social difficulties in their careers. This paper describes an implemented pilot program to help these groups of students conquer these difficulties and analyzes the benefits that can be delivered to them. This program is a joint effort of the Miami-Dade County Public School System and Florida International University. The outcomes from the program strongly show the merit of this endeavor. Student drop rate is reduced significantly while the number of graduates that obtain technical positions in many companies with salary commensurate with their peers increase considerably.

### **Key words**

At-risk students, SED students, vocational education, training

### **1. Introduction**

Manpower is one of the most precious resources in our society. Education must cultivate this resource and should provide all the possibilities to achieve this goal. The needs of some groups of students cannot be met adequately due to the limitations placed on school budgets, number of

teachers, availability of facilities and priorities set. Students classified as Emotionally Disabled Students (SED) & At-Risk students are two examples of groups that may reap the benefits of this program. The At-risk and SED students are a population with a very low percentage of graduation. In many cases, the mentality of these students is influenced by their family situations and social conditions, which are aggravated as they grow. A lack of manual and intellectual skills is typical in the majority of these students. This leads to low self-confidence, low self-esteem, and many other negative characteristics. These students need a specially designed program that helps them solve at least two questions:

1. How may we increase their self-confidence, self-esteem, and develop their full capacity with skills?
2. How may we help them obtain a job, based on these acquired skills and abilities?

The issue about SED and At-risk students is not just local but nationwide. It is evident that the regular curriculum and normal way of classroom teaching do not fit their needs. The outcomes from the regular program show extremely high drop-out and unemployment rates. They are often faced with a future of not only social, but also financial disadvantage. However, many of them are very talented in drawing, art work, crafts, etc. To serve these groups of students, a program tailored to their talents and interests is necessary. The program has to satisfy the following requirements: to restore their interest in learning, to attract their attention to learning, to help them be creative with achievable goals, to aid them to gain confidence and self-esteem, and to provide them with technical skills to meet future employment requirements. Universities can help by teaming up with local school systems, by organizing joint programs to develop an innovative teaching curriculum and methodology in order to meet the needs of these groups of students. Electrical Wiring for Building is a pilot program that was developed and implemented through the joined efforts of Miami-Dade County Public School and the College of Engineering at Florida International University nine years ago to serve the At-risk students. Today the pilot program has been expanded to help also severely emotionally disabled students. Containing 5 different sections on the subjects of Electrical Wiring for Buildings and Computer-Aided Design, this program is delivered at two different high schools in Miami-Dade County. The outcome of this pilot program illustrates its contributions and merits of efforts, such as: a significant reduction in high school drop-rate and successful employment in many companies as technical personnel have been achieved. Additionally, about 5% of the graduates have continued their education and are currently attending college in pursuit of a degree.

## **2. Primary Goal and Program Objectives**

The project's primary goal has been to address the needs of targeted SED and At-risk students by improving their quality of life, and equipping them with better tools to achieve the Sunshine Standards requirements for graduation. Objectives Have been selected to meet those needs and to form a comprehensive, effective, and high quality program. The performance measures have helped determine efficient progress towards the goals. The programs concentrate on achieving objectives all the while remaining flexible for delivery of services to student's psychological needs.

The program objectives are as follows:

1. Increase literacy and numeric skills as measured by State of Florida and local standardized assessments.
2. Improve student attendance.
3. Improve student graduation rate.
4. Improve student self-esteem.
5. Reduce student drop out rate.

### **3. Characteristics of the Students in the Program**

Currently, the program targets two types of students: At-risk students and Severely Emotionally Disturbed (SED) students. Students enrolled in the program are selected by the administrator of each school involved. The characteristics of these two types of students are described below.

(I) At-risk students show the following symptoms [1]:

1. Academic performance one or more years below the actual grade level in mathematics and reading
2. Pattern of excessive school absences for a period of at least three months
3. Pattern of excessive class cuts for a period of at least one month
4. Pattern of classroom disruption for a period exceeding one month, expressed as blatant disregard for the rights of others in the classroom and/or unjustifiable defiance of authority.
5. Manifestation of inappropriate behaviors, interests or aptitudes that would make success in a typical school unlikely.

Other characteristics of this type of students are:

1. High potential for violence
2. Difficulty with the English language
3. Serious drug or alcohol abuse
4. Six or more months of voluntary truancy
5. Psychotic or pre-psychotic behavior
6. Bizarre, unprovoked or irrational behavior of emotionally disturbed student.

(II) Severely Emotionally Disturbed students [2] are emotionally handicapped and exhibit one or more of the following characteristics, to the extent that he or she is unable to take advantage of or participate in the regular education program:

1. Inability to learn that cannot be explained by intellectual, sensory, or health factors.
2. Demonstrates inappropriate types of behaviors or feelings under normal circumstances.
3. General mood is one of unhappiness or depression
4. Tendency to develop physical symptoms, pain, or fears associated with personal or school problems.
5. Unable to build or maintain satisfactory interpersonal relationships with peers or teacher.
6. Demonstrates a variety of excessive behaviors, ranging from hyperactivity and aggression to severe depression and withdrawal.

#### **4. The Requirements on Courses Organization**

The courses should be organized taking into consideration of certain basic general conditions [3]:

1. The teacher must be confident that control in the classroom is achievable. This belief must be an iron-clad armor, which never waivers.
2. The teacher must maintain a continual, gentle, and respectful sense of humor as well as a sense of fairness.
3. The classroom must be well organized and lessons must keep students occupied in interesting activities at all times. Lessons must be paced to meet student attention spans. Changing topics/subjects, as necessary, to keep the learning process flowing. (The assumption is that this would be a self-contained classroom.)
4. There must be regular, frequent, and supervised breaks from intensive book-and-writing focused activities to physical/emotional release activities.
5. Students need to understand that they will be held accountable for their actions at all times. This is usually a new concept for this population. It is the pivotal point in educational therapy.

Besides the above mentioned general requirements, the program must also contain the following ingredients:

1. to restore their interest in learning,
2. to attract their attention of learning,
3. to become creative with achievable goals,
4. to gain confidence and self-esteem, and
5. to learn technical skills to meet future employment requirements.

It is a reality that a high percent of these students will not attend college due to economical or social conditions, but even this situation could be improved by providing them some skills for getting a good job after finishing high school. A ranking of full-time occupations by earnings in the year 2000 as per the U.S. Department of Labor and Statistics [4] is shown on Figure 1.

The same source provided the projection of the five fastest growing occupations in the period between 2002 and 2012 as follows:

1. Computer software engineers, applications.
2. Computer support specialist.
3. Computer software engineers, system software.
4. Network and computer systems administrators.
5. Network systems and data communication analyst.

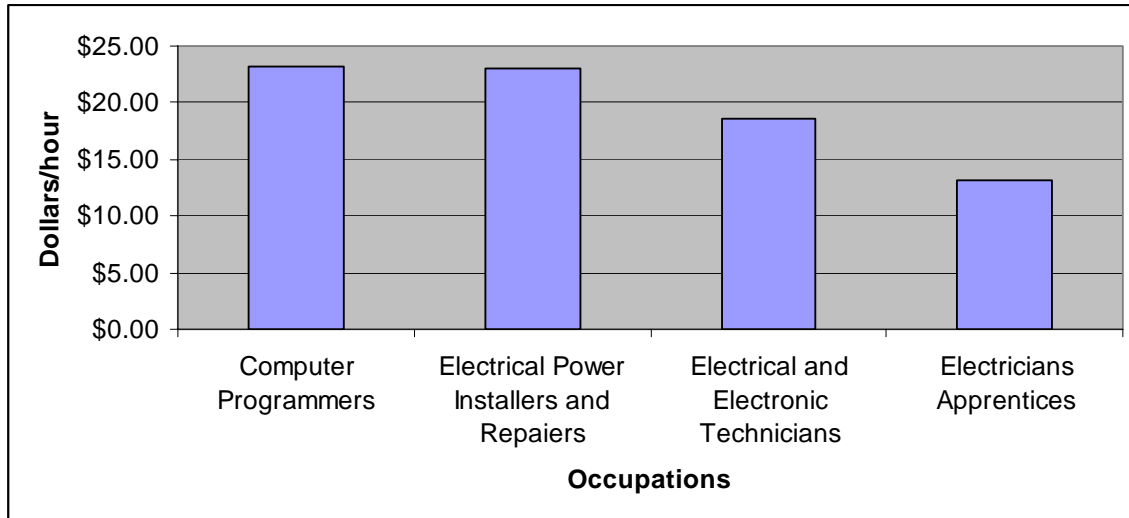


Figure 1. Ranking of full-time occupations in dollars per hour

Additional and very important aspects to consider are that the cost of implementation of the program Basic Electricity and Computer Applications are two well remunerated professions with a good future and that the application of courses in these areas is not too expensive.

Based on these criteria and having taken into account local sources of work, two courses have been implemented in two high schools:

1. Electrical Residential Wiring.
2. Computer Aided Design

A brief description of the courses is presented below. The courses have been designed for At-risk and SED students. Both courses are taught two hours per day, five days per week, during each semester. This represents a 180-hour course, where practical skills and theoretical concepts are developed.

#### *Electrical Residential Wiring*

##### *Training Content:*

1. Job Apprentices in the Electrical Trade
2. Safety
3. Grounding and Essentials
4. Tools of the Trade
5. Vocabulary And Simple Electrical Circuits Concepts
6. Boxes and Fittings
7. Wiring Systems: Use and Installation of Different Types of Raceways and Cables
8. Low Voltage Circuits
9. Simple Circuit Theory
10. Simple Circuits Installation
11. Bending Pipes
12. The Service Entrance
13. Reading Prints and Wiring Circuits

*Computer Aided Design* (contains two major parts).

The first part involves the basic drawing skill training of AutoCAD, which includes:

1. Introduction to Computers and CAD
2. Lines, Circles and Drawing Aids
3. Layers, Colors, and Line types
4. Template Drawings
5. Arcs and Polar Arrays
6. Text
7. Dimensions
8. Polylines
9. Elements of Isometric Drawing and Three-Dimensional Modeling

The second part consists of design projects. Students are encouraged to use their imagination and creativity to develop their own design drawings, while being helped and monitored by the instructor.

This program has been part of the community for years as it promotes the development of students into life-long learners who experience joy from knowledge and achievement through a solid collaborative effort between community, Public School System and Florida International University. The program achieves its vision through these initiatives:

1. Facilitation of continuous consultation and collaborative efforts between instructional staff and outside experts to embellish the instructional curriculum by infusing lesson plans with practical activities, and
2. Enhancing instruction by:
  - Collaborating with teachers to develop scaffolding and sequential instruction for teaching problem solving and critical thinking skills.
  - Involvement of students in different activities for the purpose of instilling a sense of community by building what will become a permanent resource.
  - Promoting problem solving and teaching, as well as, modeling the importance of becoming a successful individual in the community.

## **5. Experiences with the Program**

The authors have developed these courses and they have been taught during the last nine years, in which the College of Engineering at Florida International University (FIU) has been working together with Macarthur South Senior High School, Miami-Dade County Public School and several other institutions in South Florida on implementing programs for teaching practical courses on electrical wiring to At-risk students. The same program was implemented four years ago at Barbara Goleman Senior High School for SED students. More than 100 students have participated in this type of courses, of these; approximately 60% have obtained an average passing score of A or B. It is important to note that in this student population, the average passing score is fewer than 40%.

Some of the factors considered in the course organization are:

*Coordination with the Regular School Day:* protocols have been established to facilitate: 1) Communication from regular classroom teachers to University program providers regarding skills currently being addressed during the school day as well as specific deficit areas of participating students, and 2) Periodic progress reporting of FIU program service providers sent to the classroom teachers of participating students.

*Weekly Program Schedule:* The courses run through the entire school year, Monday through Friday from 7:30 a.m. through 11:30 a.m. This represents two time-blocks of student interaction in the FIU program.

*Information Dissemination:* A public relations component is being developed for the program consisting of:

1. Students' participation in local and regional fairs.
2. Press releases to local newspaper, radio stations, and the Access I TV channel.
3. Student newspaper clubs at the participating high schools.
4. Staff presentations at several seminars state and nation wide.
5. Journal papers and conference proceeding publications.

## **6. Conclusions**

No students should be left behind in the educational system. However, due to many factors, the needs of SED and At-Risk students do not receive adequate attention. Many of them drop from school and become unemployed. They stay at the lowest level in our society and cannot become financially independent. Many times this situation is carried on to the next generation. However, universities can work with high schools to help these groups of young people reverse their situation. Through the efforts of Miami-Dade County Public Schools System and the College of Engineering at Florida International University we have developed and implemented several technical programs at two high schools: Barbara Goleman Senior High and Macarthur Senior High, in Miami-Dade County. These programs have shown a significant reduction in high school student drop-rate and an increase in successful employment of these students by many companies as technical personnel. Surprisingly, 5% of the graduates are taking college credits. The need to help SED and At-Risk students exists in every school district across the nation. We would like to disseminate the news of the success of these programs and to establish a network to serve these students in need.

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