

THE WIREWORKS: THE RESULTS OF AN EXPERIMENT IN STEAM EDUCATION

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HERSHEY HIGH SCHOOL

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CREATE AND INNOVATE: CULTIVATING THE GIFTED MIND

PITTSBURGH MARRIOTT NORTH



In 1997, Carnegie Mellon announced a special ceremony to dedicate their new Jared Cohon University Center. To celebrate this event, it was decided that the University would showcase some of the greatest dramatic productions that were first written and produced on campus. These shows included *Godspell*, *Where Do We Go From Here?*, and *Pippin* (originally known as *Pippin*, *Pippin*).



But what the traditional CMU Drama Establishment didn't realize....



...That a little-known, original musical writing club, called Scotch'n'Soda, was producing some award winning shows and entertainers of their own.

What WAS Scotch'n'Soda?

Scotch'n'Soda is a student-run theatre organization that still resides on the campus of Carnegie Mellon University. Its initial mission was to create and produce original, full-length musicals. Founded in 1907, S'n'S is one of the oldest student-run theater for original works in the country. Students from every department in the school could write, compose, design, direct, perform in, and otherwise become involved with every aspect of an original production. Works were regulated via critiques from peers with no teachers or grades involved.

BUT--Because Drama and Music students began to truly enjoy the unabashed creation of these new works (which began to take toll on their academic performance), these Departments restricted participation by students from the School of the Arts.

Due to the Departmental restrictions, and tuition costs, students' interest in writing original musicals practically disappeared. The present organization produces only small one act showcases. Mainstage musicals are now *rented* from New York.

Scotch'n'Soda's participants came from every Department in the University. The skills utilized by participants included:

Music Composition	Play Writing
Lyric Writing	Directing
Acting	Dramaturgy
Dance	Orchestration
Set Design	Costume & Prop Management
Lighting	Electrical
Arts Management	Publicity & Publishing

The wonderful thing about the process was that students 'exchanged' or taught various skills to their fellow students. Because participants came from all over the school, and the interaction between them freely shared, the amateur artists who remained in the group began to demonstrate a working knowledge, and sometimes even a semi-professional proficiency, in an area of production.

So What Was So Special About Scotch'n'Soda?

- Writers formed collaborations without fear of grading, restrictions or 'assignments' of plots, collaborators, time restrictions, etc.
- Dance captains had to 'design' the choreography for new works and sometimes created new types of genres.
- Designers usually came from the Design or Architecture Department.
- Directors (who usually had to 'wait their turn' in the Drama Department), could freely direct new and original works whenever they wanted.
- Performers had to 'create' new characters from scratch. Scripts & music were consistently rewritten and altered...not to mention the hours of 'cold' readings. (There were no CDs or DVDs to 'replicate' or even imitate performances).

Basically, the freedom to collaborate, design and work on an original musical replicated the development process of new musicals experienced by a budding collaborative teams on Broadway at the turn of the century.

Mickey Rooney



The Marx Brothers



The Four Cohans



The Foy Family

The Seasoned Performer & Artist

Some Fond Memories...



- Hated Writing Class
- The only 24 hour buildings on campus were the arts and science buildings.
- Doubted my work
- Failed Music Theory & English
- Was always 'trading' music lessons for all-nighter tutoring in the computer labs.
- Despised my school work and assignments
- Spent DAYS writing new plays and musicals
- Members of S'n'S could sometimes write and work until morning. Security used to beg members to go back to their dorms!
- Won most of the play writing competitions
- Composed music and full-length scripts
- Followed IBM reps who were interviewing composers for computer coding projects in the computer labs.
- Became addicted to the work.

...And eventually got 'dismissed' from school.

Noted Scoch'n'Soda Alumni Performers and Entertainers



Frank Gorshon

(Actor)
(Director)



Barbara Feldon

Michael Skloff
(Composer)



Stephen Schwartz

(Actress & Author)
(Composer)



Alex Segal



Herb Garner



Javier Grillo-Marxuach





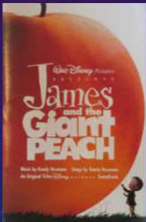
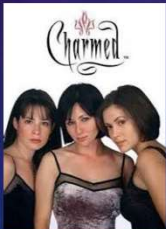
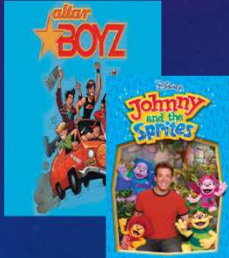



Michael Patrick Walker



Iris Dart



			
<p>Steven Schwartz (Music Score)</p>	<p>Iris Dart (Book and libretto)</p>	<p>Michael Skloff (Composer)</p>	<p>Stephen Swartz et al (Composer/lyricist)</p>
			
<p>Michael Skloff (Composer/Arranger)</p>	<p>Javier Grillo-Marx (Producer/Writer)</p>	<p>Michael Patrick Walker (Composer/Arranger)</p>	<p>Saul Swimmer (Producer/Writer)</p>

...Playing to Learn

The WIREWorks Story

In 1995, a project called WIREWorks was presented to the Harrisburg Opera Association. Based on the Scotch'n'Soda model, the intent of the project would provide the community with a new way of looking at the arts and education. The only donated space was a 'teenage' hangout in New Cumberland, Pennsylvania, called The WIRE.

Much like Scotch'n'Soda, the assignments and pace of WIREWorks was dictated by the students themselves and not via traditional "lesson plans". Instead of the students writing original musicals alone, teachers were added so that students could ask questions pertaining to structure, construction and marketing—but only during the process of developing their own works! In this manner they ran ahead as fast as they desired. The only challenge was to keep pace with them.



WIReWorks

(Discipline in the Arts = The Art of Discipline)

VISION

*WIReWorks' vision is to
Develop a
Philosophy
which promotes
Responsibility
to nurture
Creativity
so that our Community may achieve
Productivity*

PHILOSOPHY

- The program will be free to the community
- No student will be turned away
- All students are talented
- Talent must be first "discovered" then trained
- Collaborations on pieces are encouraged
- No criticism is permitted
- All plays and/or songs can be "tested" and "repaired"
- There is always enough time



RESPONSIBILITIES

- All participants must be willing to teach or learn for "free".
- They must show up for a 3 hour class per week.
- All participants must understand that art and technology is NOT a hobby but an industry.
- Collaborations may be required in spite of personality conflicts.
- Students must be willing to try a new skill.
- All Prima Donnas will be dismissed as soon as they're scoped them out!
- What's a grade? The audience is armed with rotten tomatoes!! It's either PRODUCE or *produce*!
- Do nothing which brings disgrace to the workshop, classmates...or yourself.

CREATIVITY

1. Do not FEAR failure. FAIL! Keep trying until it "works"
2. If you can't do it...TRY IT!
3. If it ain't broke...BREAK IT!!
4. You've made a mistake? We'd all like to see it, please.
5. Playtime IS Work time
6. Learn that "No" or "Next" is not the end of the lesson.
7. If not today...tomorrow. (For late bloomers)

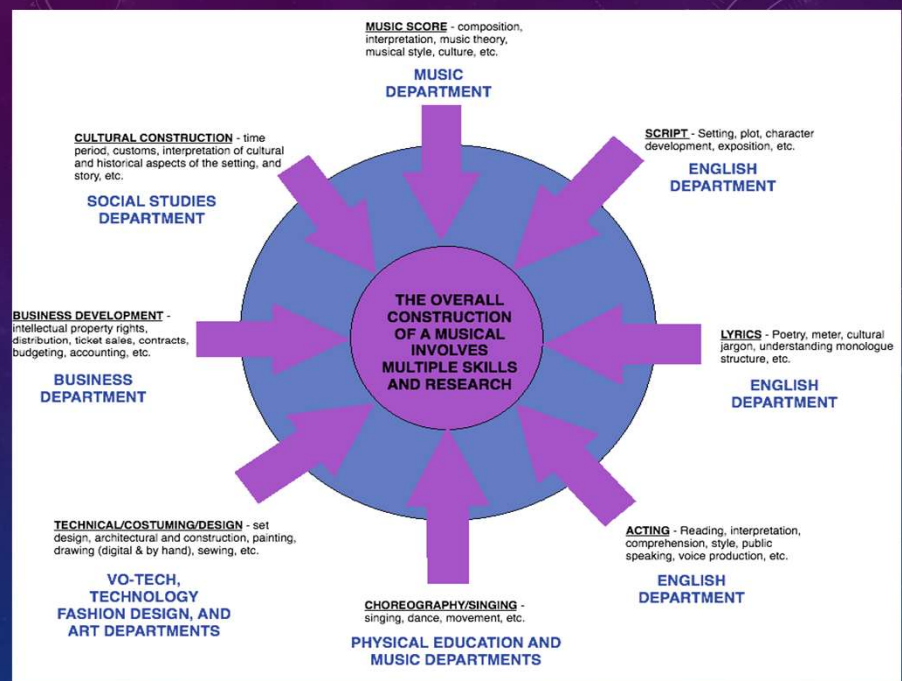
Productivity...

- Products take the form of plays, songs and performers and original musicals, films, songs and plays. The 'techies' who joined had to begin learning how to construct homepages, recordings, transmissions, knowledge of hardware, and any emerging technologies.
- If a product needed to be adapted or didn't exist...yay! You've found a market niche.
- Students were "graduated" to local arts organizations, the tech workforce and/or institutions of higher education. (WIREWorks constructed the initial website for The Whitaker Center and other local arts organizations)
- There is less need to 'import' performers, directors and tech consultants from other areas of the country--thus less travel and professional expenses for local companies. "We're selling here, folks, not buying."
- Our local arts & educational communities will be encouraged to live up to their vision statements to support and encourage local artists.
- All WIREWorks members should graduate with a general understanding of intellectual property law, how royalties & distribution work and other aspects of this industry that literally determine if we will survive in the fields of art or technology.
- They were encouraged to create viable portfolios of their work for college applications. They were also taught to seek out schools which fit their career paths rather than simply applying for 'brand' name schools.
- Finally; help your community when you can. *What you will not offer in talent, you will surely pay in tax.*

And if you're interested in PLCs...

The creation of a musical is probably the purest form of a **Professional Learning Community**.

Collaborations are not only formed among the students, but in training young writers and performers, teachers must form training cohorts to accomplish training goals.



Something Unusual...



The most striking observation in WIREWorks' was that the students began to demonstrate 'behaviors' similar to the students involved in Scotch'n'Soda. These behaviors manifested alone or were a combination of the following:

- Increased energy levels or accelerated learning pace
- Students began to demonstrate 'obsessive' productivity
- Outbursts of concentrated work
- Skills became so integrated, students simply jumped from the arts to technology. Skills were so highly integrated students performance became almost uniform
- Teachers commented on an 'abbreviated dialect' between collaborators on projects
- There was a preference for 'night writing'
- Irritability when their work or workshop had to be temporarily postponed or halted

The group demonstrated the final behavior over the Christmas holiday that year when both, Christmas Day and New Years Eve fell on a Tuesday. A special substitute teacher volunteered to review their work.

	Scotch'n'Soda	WIREWorks
<u>(Factors)</u>		
Environment	The Dungeon (basement office)	The WIRE Coffeehouse (Old store front)
Public Impression	Not endorsed by faculty	Not quite endorsed by parents or
teachers		
Participants	Renegade Music/Drama/Tech majors	Teenagers in their "pupae" stage
Structure	Loose structure	No structure
Work Schedule	In between classes and in the night	Tuesday evenings and into the night
Cost	All Volunteer	All Volunteer
<u>(Social)</u>		
Objective	Created Original Musicals & Plays	Created Original Musicals & Plays
(websites/recordings/graphics)		
Group structure	Loners, some small cliques	Loners, small cliques
Origin	Came from every college department	Came from many school districts
Behaviors of Note	Ate every meal together	Ate together after class
	Met between classes and at night	Met on Tuesdays, weekends & free time
	Hacks would share computer skills	Artists and Techies shared
skills and new findings		
continuous "drive"	Highly agitated behavior and "drive"	Highly agitated behavior and
other's energy	Fed off of each other's energy	Fed off of each
Tight clique	Tight clique	
higher speed	Exchange of Ideas at high speed	Exchange of Ideas moved at
	??	

Generators vs Replicators:

...or why new start-up companies begin in a garage

Because all works produced at the The WIREWorks were original, the differences between those who generated work and those who replicated it became very apparent:

Generators

Composes or constructs
Plays and improvises
Will risk reward to learn new skills
Failure is part of the process
Masters a skill and moves on
learned skill
Prefers personal learning rate
Desires to work on personal projects
More likely to drop out of college
Concept Based

Replicators

Reads
Instruction Oriented
Prefers to achieve a perceived reward
Failure is a destination
More stubborn to abandon
Prefers group learning
Relieved to abandon assigned projects
More likely graduate
Detail Based

The Irvine Report

On February 28, 1997, a study by University of California at Irvine researchers showed that piano lessons significantly improved the reasoning skills of preschool children. The study involved 78 three- and four-year-old children of normal intelligence from three preschools in Southern California. Thirty-four children received private piano keyboard lessons, 20 children received similar private instruction on computers, 10 children were given group singing lessons and 14 children in a control group received no special lessons. None of the children involved had any prior music lessons or computer training.

The Results? Only the piano keyboard group showed significant improvement in their ability to use abstract reasoning skills to complete the task. Abstract reasoning skills -- clinically known as spatial-temporal reasoning -- involve the mental manipulation of images and information. According to the researchers, "...these skills are crucial ingredients in the higher brain functions that are used for mathematics, science, engineering, or even a good game of chess."

Pianists

Visual

Uses manual dexterity

Uses manual dexterity

Material is "quantitative"
"quantitative"

Computers

Visual

Vocalists

Audio

Relies upon body "sensations"

Material is "quantitative/qualitative" Material is

WIREWOrks!

The Class of 1996

- ◆ Safe environment for creativity
- ◆ Trust
- ◆ Permission to Initiate “play”
- ◆ Constantly keep tools (including new technologies) up-to-date and within reach
- ◆ Accelerate or diminish rate of data dissemination according to the student’s ability to assimilate concepts
- ◆ Encourage or advise during the learning process (mentor). Create collaborations if need be.
- ◆ Curriculum flexibility in the event of a technological change.
- ◆ DO NOT BE ASHAMED TO ADMIT THAT YOU ARE ‘OBSOLETE TODAY!!’
- ◆ Do **NOT** measure performance or levels before or during process
- ◆ Permit students to conclude their work and to make mistakes
- ◆ Let students measure themselves at conclusion of project
- ◆ They fear critiques from their peers or audiences more than a bad grade

The Curriculum for WIREWOrks broke down into the following skills:

Arts

Drama

Voice

Graphic Animation Construction
Composition (formula based construction)
Graphic Arts and Design
applications (MP3 & film etc.)
Play writing (formula based construction)

Virtual and traditional publications

Student Portfolio Development Skills

Volunteer Training & Placement
College Prep & Placement
Presentations
Internship Placements

Publication Community Service

Technology

Homepage Construction

Special Effects (wav., midi, etc.)
Real Time

Directing

Business & Transferable

Memetics
Corporate and Public

Multimedia

WIREWorks in a Public-School Setting

To introduce teachers and students from other districts to the art of playwriting, the Hershey WIREWorks Class of 2012 donated the remainder of their funds to host William Chandler down from The Young American Writers Project to provide a class for all schools in the Central Pennsylvania region.



The Apollo Young Playwright Award was finally approved by the Board and it unveiled at that spring ceremony by First Lady Susan Corbett, wife of the Governor Corbett of Pennsylvania at the Apollo Awards held in May of 2012.



Bobby Hummel was invited to present the first award with a representative of The Dramatists Guild of America donated a year's student membership with the National Guild.



Jessie Weber, of Hershey was the first recipient of the award in May 2013.



Downtown Hershey

WIREWorks now entails most of the activities relevant to the the arts and technology in Hershey's Gifted & Enrichment Program. Because of its integrated nature, students can belong to a single organization while participating in Poetry Out Loud, The Business Challenge, Shakespeare Competition, Scholastic Writing & Arts Awards, The Apollo Awards, Youth and Government, Memory Team, and even internships. WIREWorks is basically a single-platform curriculum.



Rebecca Miller
(Professional Singer. Photo:
Harrisburg Magazine)



Gavin Ferguson
(Radio Announcer/Writer and
member of The Critics Choice
Awards in LA – KDND 107.9.
Photo: KDND 107.9)



Baron Roth
(Singer/Writer/ Instrumentalist/Performer and
Professional Lighting and Sound Engineer)



Sally Bowman
(Musical Theater
Director/Professional Writer/Musician
and Committee Executive Director-
Senate of Pennsylvania)



Joshua Bennett
(High-fashion knitwear and works for
designers like Michael Bastian,
Project Runway and Tommy Hilfiger.
Photo: The New York Times)



"Late night diner hang outs at the Summerdale Diner in
Enola helped him grow creatively. "All my friends, we'd always
meet there and drink coffee and eat and hang out," he recalled.
"A lot of script writing and music writing got done."
(Patriot-News)

"...While working at that most manly of undertakings — musical
theater — at the Goodspeed Opera House in East Haddam,
Conn., did Mr. Bennett pick up needles again. This time he was
hooked for good."(NY Times)

The Original WIREWorks Alumni

CONCLUSION

So what is the role of the arts in an age of technology?

When the national infrastructure for the Internet was created, STEM skills were truly needed for the creation, installation and maintenance of the abundance of technological HARDWARE.

What flies across those lines are basically works of art! The Arts are basically the CONTENT industry.

Technologia (Greek):
A systematic treatment of an **ART** form.

A Little Glimpse into the Future