



*STEM-H Center for
Outreach, Research & Education*

Project Management for STEM-H Educators

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Welcome, Introductions, Expectations & Plan for the Day

- Welcome & Housekeeping Details
- Introductions & Expectations Activity
- Anticipated Outcomes
- Plan for the Day
- Program Evaluation Survey Request (online link)



Can Educators DO Project Management?

- Absolutely **YES!** Everyone can DO project management! PM skills are applicable for all types of projects (education, business, personal).
- The differences between PM in business & PM in education are found mostly on the **PRODUCT** side of the equation and NOT the **PROJECT** side of the equation.

WHY Would Educators Learn PM Skills?

- PM skills are **VERY** marketable & make life easier...in all sorts of areas!
- If you teach your students PM skills, you will equip them with the **ESSENTIAL 21st CENTURY SKILLS** they need to be successful in college & careers...the skills employers are seeking!

What Is a PROJECT?

A sequence of **unique**, **complex**, and **connected** activities having one **goal/ purpose** and that must be completed by a **specific time**, within **budget**, and according to **specifications**.



Another Way of Saying It...

- Projects are **goal-oriented**.
- There is something **unique** about every project
- Projects have a **finite duration**.
- Projects require coordination of **interrelated** activities.

Did You Know You Already Do Some Project Management?

- **UNIQUE** subjects & **COMPLEX** rules 
- **TIME CONSTRAINED** with a **PRESCRIBED BUDGET** 
- **GOAL** to achieve proficiency 
- **SPECIFIC STANDARDS** to be met 

So, What Is **PROJECT MANAGEMENT**?

Project Management Institute (PMI) defines **PROJECT MANAGEMENT** as

“the application of knowledge, skills and techniques to execute projects effectively and efficiently.”

Important PM Terms

- **Scope**
 - All the **work required** to meet project objectives
- **Change Management**
 - The **means by which a project may be changed midstream**...must be agreed upon by the stakeholders who agreed to the original project scope.
- **Work Breakdown Structure (WBS)**
 - Identifies **ALL** tasks in a project (**TASK LIST**) and breaks down the project into **small, manageable pieces**



Important PM Terms

- **Critical Path**
 - **The succession of connected project tasks that will take the longest to complete.** The Critical Path is the longest path to complete the project and each CP task has to be completed before the next can begin (dependencies). Therefore, to complete the project on schedule it is the critical path and the tasks that are part of it that must be managed most closely.

<http://management.about.com/od/projectmanagement/g/Critical-Path.htm>

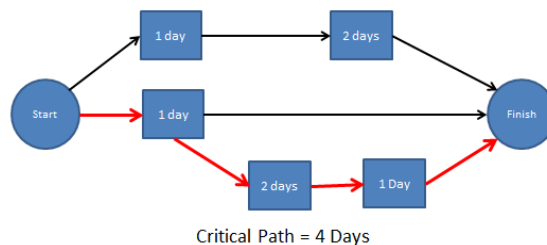


Image Source Information

Morken, Ragnar Alexander T. "Coordination in Large-Scale Agile Development." (n.d.): n. pag. *Divva-Portal Academic Archive On-Line*. Uppsala University, 15 May 2014. Web. 7 Nov. 2014. <http://www.divva-portal.org/smash/get/diva2:751699/FULLTEXT01.pdf>

Important PM Terms

- **Risk Management**
 - The means by which **uncertainty is systematically managed** to increase the likelihood of meeting project objectives.
- **Key Stakeholders**
 - The people or organizations involved in project performance or affected by the project.
Ask...Who will make a contribution to the project?
Who will be affected by this project?
- **Milestones**
 - Significant events in the life of a project.
 - Milestones do not change anything on the project, but can identify internal/external dependencies or may also represent significant events that are not represented in the WBS as a work package or summary task. Often, milestones are points at which if some or all of the tasks leading up to that milestone did not get done, the project will stall.



Project Ideas/Examples

What kinds of “projects” could a STEM-H educator implement?

- Develop an inquiry-based student research class or afterschool STEM-H program with the intent of having students prepare to compete in a pre-college STEM-H competition
- Create a robotics program & compete
- Develop a mentorship program for students with adults in STEM-H related careers.
- Develop a PM Skills Training Program for their students that is integrated into their project-based curriculum!
- What else can YOU think of??



Project Idea Exercise

• Project Idea Development

– 4 minutes

- Write brief description of your project idea (Exercise #1) that can be shared in 1-3 sentences.

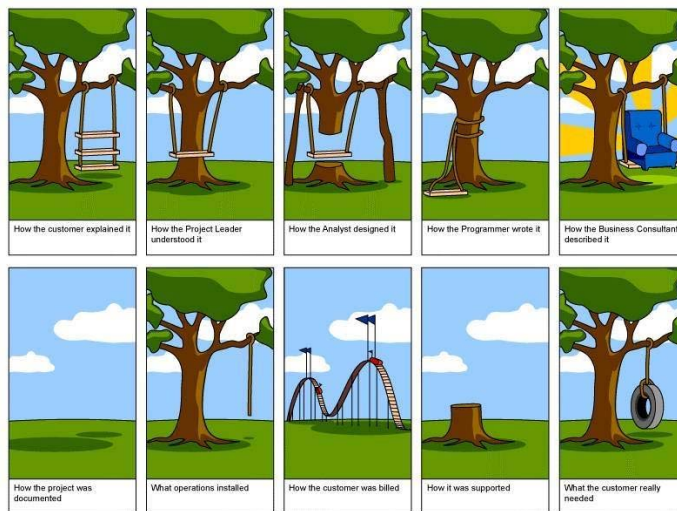
– 11 minutes

- Identify a Timekeeper!
- In your group, share your project ideas. Each person has 1 minute to describe his/her idea, adding detail from the initial written description if time allows & 1-2 minutes to entertain questions/feedback from peers.

– 15 minutes

- **Group Share** – Each participant shares his/her 1-3 sentence project description.

What Typically Happens With Projects Not Well Managed?



Anyone recognize this scenario?!

Can you identify any times when this has happened to you? In your school?

There IS a better way...and it reduces the risk of this typical scenario happening!

5 STEPS of PM

Terminology & Jargon

1. Start Up
2. Define/Confirm Scope & Requirements
3. Develop Plan & Secure Resources
4. Track, Control, Report, & Review
5. Completion & Assessment

PROJECT SUCCESS

Customer Requirements Satisfied/Exceeded

Completed Within Allocated Time Frame



Completed Within Allocated Budget

Accepted By Customer

PROJECT FAILURE

Scope Creep



Poor
Requirements
Gathering



Unrealistic
Planning &
Scheduling

Lack of
Resources

Who Are Stakeholders?

- Someone who has a  **OR**  impact on your project and can influence the expectations & deliverables.
- Who will the stakeholders be on **YOUR** next project?
- **Examples of Stakeholders in Education:**
 - *Students, Principals, Parents, Suppliers, Vendors, End-Users, Team Members, Sponsors, etc.*

Stakeholders Exercise

• Who Are Your Key Stakeholders

– 5 minutes

- Think about your project idea.
- Brainstorm a list of all the potential Key Stakeholders you can think of. (Exercise #3)

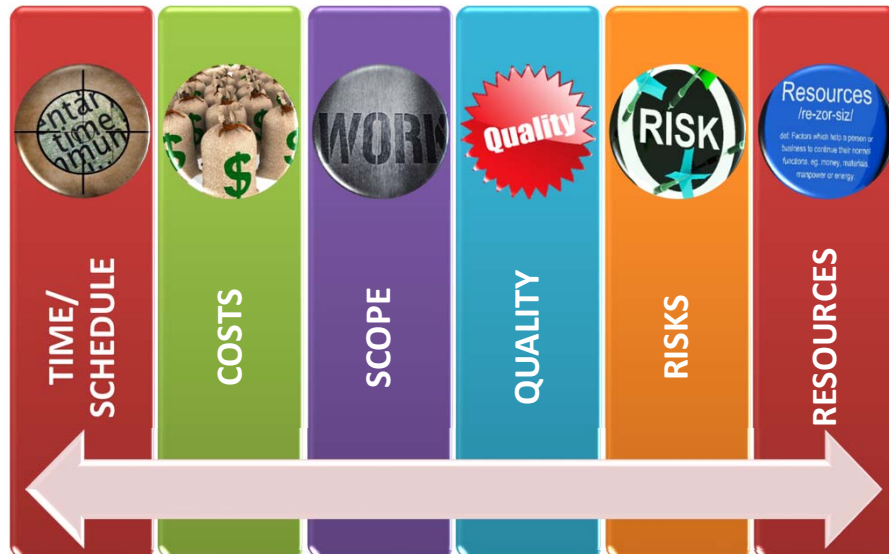
– 10 minutes

- **Small Group Share...**In your small group, each person will share his/her list of Key Stakeholders. Group members are encouraged to offer feedback & suggestions.

– 10 minutes

- **Group Share...**Choose one person from your group to share his/her draft Key Stakeholders list with the larger group. 2 minutes per group

Competing Project Constraints



Scope Management

DEFINITION and **CONTROL** of what *IS* and *IS NOT* included in the project.



Project Scope Exercise

• Scope Statement Development

– 5 minutes

- Write brief description of the scope of your project (Exercise #2). Identify the **who**, **what**, **where**, **when**, and **why**. What work needs to happen to complete this project?

– 15 minutes

- Identify a Timekeeper!
- In groups, share your draft Scope Statements and get feedback from the group that may help you refine your Scope Statement

– 10 minutes

- **Group Share** – Choose one person from your group to share their Scope Statement with the larger group.

Cost Management

- Process required to ensure the project completion within the approved budget.
- PM needs to manage all of the following:

RESOURCES



QUANTITIES



Time Management

Are you aware of **HOW** you spend your **TIME**?

- Self-Observation
- Time/Motion Study
- Take Pulse of Emotions & Attitudes
- Proactive or Reactive?
- No Judgments...Ponder, Don't Punish



Don't Agonize...ORGANIZE!

How to Get There...



- **Create a Flight Plan**
 - A written system of recording what you want to do & assigning priorities
 - High tech, low tech, & no tech
 - Move items from your mind to some kind of a “minder” that works for you!
- **Clear the Runway**
 - Create home & office environments that work FOR you, not AGAINST you!
- **Identify Opportunities to Accomplish Home/ Work Activities With Less Effort & More Effect**

Project Framework

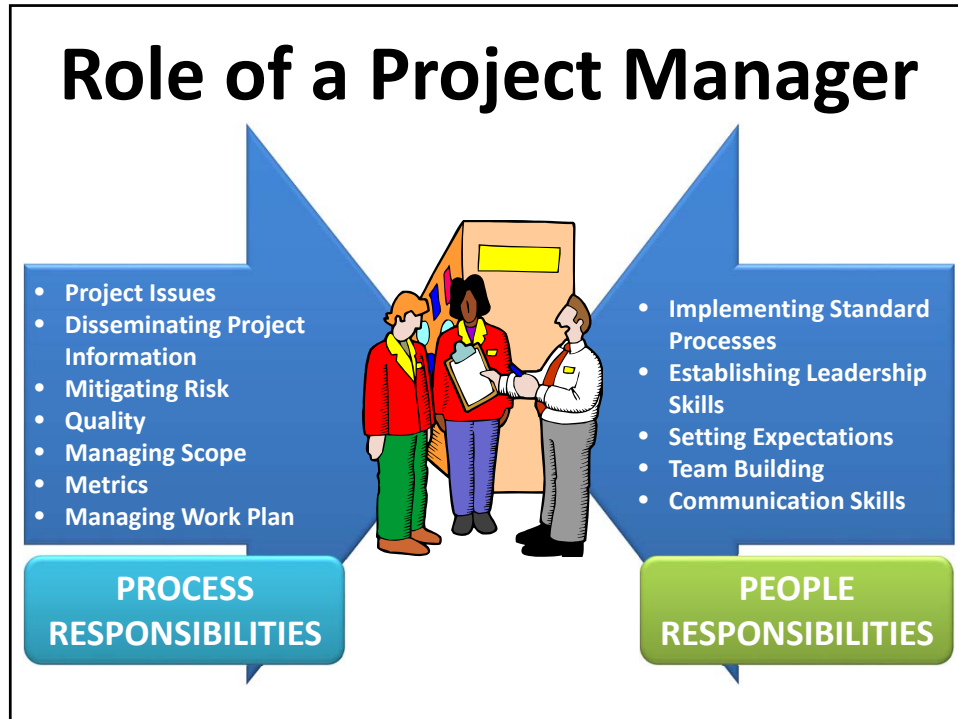


The Who-What-Why...

- **What** are you going to deliver or accomplish?
- **When** will you produce deliverables?
- **Who** are your stakeholders (*ex: school administration, sponsors, partners, students, teacher team members, etc.*)?
- **Why** is the work necessary?
- **Where** will the product be used and/or delivered or built when appropriate? **OR** How will the program be used and/or delivered?
- **How** will you accomplish & manage the objectives?

How Is It Done?





- Skills, Processes, & Artistry
- Project Management is a set of **learned skills & processes** which, when **artistically applied**, improve project results.
- Projects can be **managed in phases**, with each phase including **specific activities** & producing **well defined results**.



What Do PM's Do All the Time?

- **Constantly scans** the environment for signs of conflict
- **Anticipates** obstacles and changes in requirements
- **Keeps the team & upper management abreast** of changes in project timelines & deliverables
- **Checks their ego at the door** and knows when to say, "I don't know, but I'll find out and get back to you."

Critical Path Planning Checklist

-  **Identify Tasks or Activities**
-  **Put Tasks in Order of Completion**
-  **Identify Milestones w/ Deadlines**
-  **Lay Out Critical Path**



Schedule

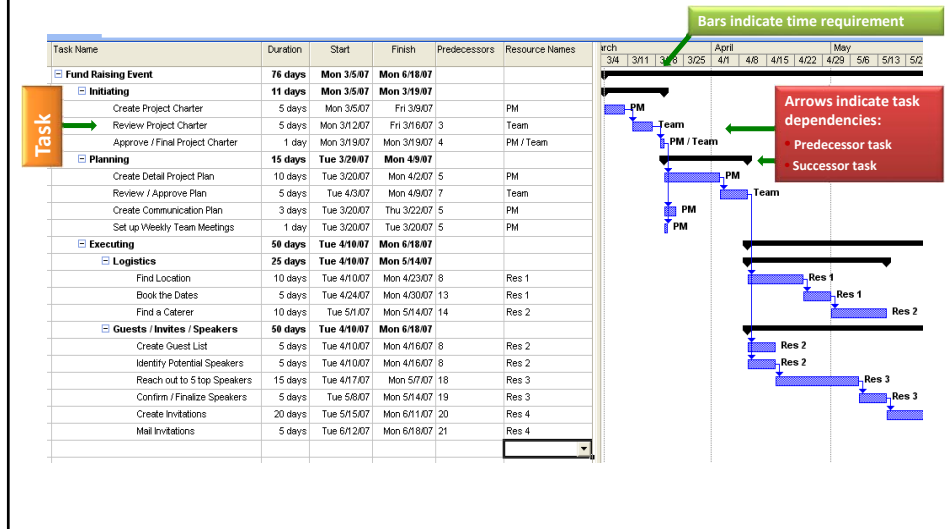
- Good planning allows for the project manager to **manage & control the project tasks & resources**.
- To complete the project schedule, **determine the time** for each task and **assign a resource** who will be responsible for the task.
- The team & project manager should **divide up the teams** & provide an **estimate of time** to complete that task.



GANTT Chart

- **Visual Scheduling Tool**
- **Graphic Representation** of Information in **WBS (Work Breakdown Structure)**
- **Show Dependencies** Between Tasks, **Personnel, & Other Resource Allocations**
- **Track Progress** Toward Completion

GANTT Chart – Microsoft Project



Critical Path Exercise

• Critical Path Development

– 15 minutes

- With your group, choose one person's project. Review the description & scope statement drafts.
- As a group, work to determine a draft of the Critical Path for the project (Exercise #3)

– 15 minutes

- **Group Share...**Back in the large group, the person whose project critical path draft was developed will share...
 - Brief Project Description
 - Brief Scope Statement
 - Description of Draft Critical Path

Risk Management

- **Project Risk Management** is the art and science of identifying, analyzing, and responding to risk throughout the life of a project and in the best interests of meeting project objectives.
 - **Main Processes Include:**
 - » Risk management planning
 - » Risk identification
 - » Qualitative risk analysis
 - » Quantitative risk analysis
 - » Risk response planning
 - » Risk monitoring & control

Risks That Can Affect a Project



- The **technology used** on a project
- The **environment** in which the project is executed
- The **relationships** between team members
- How well the project **fits the culture &/or strategic objectives** of the organization
- The **magnitude of change** that will result from a project

Project Risk Can Increase When...

- Lack of **Resources**
- Lack of **Communication & Information**
- Lack of **Responsibility &/or Authority**



Top 10 Risk Item Tracking



- Top 10 Risk Item Tracking (Risk Register) is a **qualitative analysis tool** that helps to identify risks and maintain an awareness of risks throughout the life of a project.
- Establish a **periodic review** of the Top 10 Project Risk Items.
- List the **current ranking, previous ranking, number of times the risk appears** on the list over a period of time, and a **summary of progress** made in resolving the risk item.

Example...

Risk ID#	Risk	Impact (high or low)	Impact Description	Probability of Occurrence (high or low)	Suggested Response & Description (avoid, mitigate, accept)	Risk Response Approval Status	Risk Status (Not Occurred, Occurred, Corrective Action, Closed)
1	Inadequate Planning	High	Project could fail	High	Mitigate – Revise Project Plan	Approved	Corrective Action
2	Poor Cost Estimates	High	Project could go over budget; More \$ not available	Low	Avoid – Make sure cost estimates are accurate		Not Occurred
3	Poor Time Estimates	High	Project could go over budget or not be completed	High	Mitigate – Revising schedule estimates	Approved	Corrective Action

Adapted from Sample Provided by Jane Betterton, PMP (see Resources List)

More on Risk...



Risk ID Exercise

- **What Are YOUR Project's Known Risks?**

- **5 minutes**

- On your own, brainstorm a list (write them down) of all the things you can think of that are or might be risks you'll encounter when implementing your project. What might happen that could throw you off track?

- **10 minutes**

- **Group Share...**in the larger group, volunteers share the risk lists they developed and get feedback from the group



RESOURCES

- Betterton, PMP, Jane. betersw@swcp.com
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