Instructor or Project Manager: What is the Right Balance as Software Engineering Education Goes Global?

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No simple answer, but...

- An instructor needs to know something about Project Management to survive and thrive on student global software development (GSD) projects.
- A capacity to consider all the interrelated aspects ahead of time leads to a far smoother and more rewarding experience.
Overview

- Background
- Educational dilemmas
- Project Management for educators
- 10 key questions for instructors
- Educational strategies
- Educational potential
Background

4* years of GSD projects

*3 years at the time of writing this paper
Educational dilemmas

Q1: How much of the planning and management activity should be assumed by instructors and how much should be relinquished to students?

Q2: Where should the responsibility for overall project coordination lie?

distribution of responsibilities
“generally recognized as good practice on most projects, most of the time”

5 process groups: used to delineate those Project Management concerns associated with setting up and running an annual GSD initiative across institutions

9 knowledge areas: used to articulate project-by-project concerns that need attention for every individual student project in the GSD initiative
GSD initiatives

- Initiating: define and authorise
- Planning: objectives and plans
- Executing: integrate people and resources
- Controlling and monitoring: measure and act
- Closing: formal acceptance and ending
Initiating

- Institutional support for all instructors
- Visible institutional commitment
- Correct channels / formal agreements / protocols
- Negotiated goals of each side, roles and responsibilities
- Understanding of local constraints
- Agreed preliminary scope (resources, time and deliverables)
- Prior relationships with personal bonds and commitment
GSD projects

- Project Integration Management
- Project Scope Management
- Project Time Management
- Project Cost Management
- Project Quality Management
- Project Human Resource Management
- Project Communications Management
- Project Risk Management
- Project Procurement Management
Project Integration Management

- Coming together
- Challenges to do with trust more so than technology
- Social and cultural integration needs emphasis: foundation for project and technical integration
- Needs to be evident in initial planning
- Student socialisation
10 key questions...

...for instructors
1. How strong is your existing relationship and long-term commitment to the other institutions and instructors?

- If you have no prior collaboration and are only in it for the short-term, rethink your motivation.
- Such projects need to be a team-shared endeavor.
2. Can you delegate and trust the other parties to do their job?

- The task is forbiddingly arduous for those instructors who cannot do this
- The perception of interference can become very real
- Roles and responsibilities must be agreed and maintained
3. Are you prepared to give your time to benefit all the students participating in the project?

- Can’t just focus solely on your own students
- Instructors who cannot look outwards and care passionately about the learning of all the students across the globe are going to have a difficult time with GSD projects
4. Will you work to find a schedule that is agreeable by all?

- GSD projects are necessarily about compromise.

- It is not going to be possible to have tight control and achieve exactly those learning objectives as when a course is entirely under your control.

- Instructors who cannot adapt to the needs and situation in other locales will struggle, so only consider GSD if you have the flexibility to go where the projects need you to go.
5. Are you aware of your assumptions?

Incorrect assumptions are the most difficult things to account for once GSD projects are underway.

Do the students and instructors have the requisite knowledge and, if not, are you prepared to work with the existing skills, or to help teach and mentor others?

If access to technology and resources is uneven across the participating institutions, are you ready to find a way to work within the constraints of the lowest common denominator?
6. How much time can you realistically dedicate to the GSD projects?

- If you are not going to be able to be responsive in a way that is acceptable to all sides, perhaps you should not bother.

- A week's delay in responding to a request from either an instructor or a student erodes trust, and can kill morale and a project.
7. How are you under pressure?

- The stress placed on a GSD team can far outweigh that of a co-located team as students learn to deal with situations in which they must relinquish control and trust others.

- You are going to need to deal with the occasional crisis and play a persistent role managing expectations and perceptions.
8. What are your global pre-dispositions?

- You need partnerships based on respect and understanding
- If you do not spend the time to learn about other countries and cultures, your students won’t either
9. What is your motivation?

- What do you want to learn about GSD from the experience?
- If you have no personal goals and objectives, what will keep you interested rather than frustrated at the work?
10. Are you a reluctant Project Manager?

- Instructors need to master some of the repertoire of Project Management.
- The more planning that goes into creating an environment for the project and alignment of milestones the better.
- Just enough structure and control will provide the opportunity to be flexible locally.
Educational strategies

Q1: How much of the planning and management activity should be assumed by instructors and how much should be relinquished to students?

- Overarching plans, global dependencies, fewer projects, just enough monitoring and intervention, student PMs

Q2: Where should the responsibility for overall project coordination lie?

- Equal partners, motivations, memory, side of integration / assembly
Where getting the balance right can take you...
Educational potential

US
Pace University
NYC Campus

US
Pace University
Pleasantville Campus

US
Students and IT Professionals
(Global Bank in NYC)

INDIA
University of Delhi

THAILAND
Mahidol University

CAMBODIA
Royal University of Phnom Penh

CAMBODIA
Institute of Technology of Cambodia

12 hours
9.5 hours
2.5 hours

SQA 2008

Educational potential
Client quality coaches
(5 US graduates)
to help the client to baseline the requirements, create a versioning and requirements management process, and help prepare for acceptance testing and software selection.

Client
(5 Cambodian ITC students)
to manage the requirements and maintain a requirements wiki, and each student sponsors a development team.

5 development teams
5 versions of the software!

US NYC
(6 students)

US PLV
(4 students)

Thailand
(4 students)

India
(5 students)

Cambodia ITC
(4 students)

Developer quality coaches
(5 US graduates)
to help each development team to inject quality into their process and products.

Socialization team
(2 Cambodian RUPP students)
to help with socialization.

SQA trainees
(4 Thai students)
to shadow / learn from the coaches and auditors.

Auditors
(16 US graduates and IT professionals)
to provide early feedback on the requirements, audit each development team and externally test the software delivered. One student is the SQA Manager.

Requirements (4)
Design / Prototype (4)
Code / Test (6)
Deploy / Maintain (n)

Bonding / Setup (2)
Project with SQA (14+ weeks)

Framework for the Software Development Lifecycle - feedback and iteration triggered by coaching and auditing

Multiple releases of requirements
Thanks

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