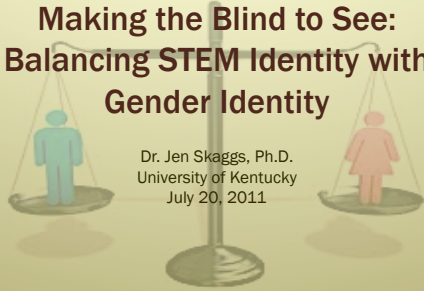


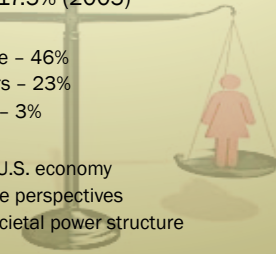
## Making the Blind to See: Balancing STEM Identity with Gender Identity

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July 20, 2011



## What's the problem?

- Decrease of women in technology and engineering by 17.5% (2005)
- Women (2007)
  - In the workforce – 46%
  - In STEM careers – 23%
  - In engineering – 3%
- Resulting in:
  - Strains on the U.S. economy
  - Loss of valuable perspectives
  - Unbalanced societal power structure



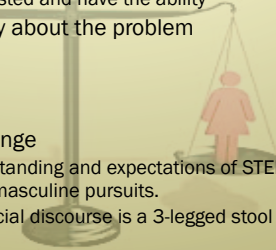
## Shifting Paradigms

- Technology and Gender
  - Mutually socially – constructed
    - Technology is not gender-neutral
    - Gender is not a fixed, essential trait
  - Dynamically constructed in relation with the environment
- STEM careers are disproportionately masculine



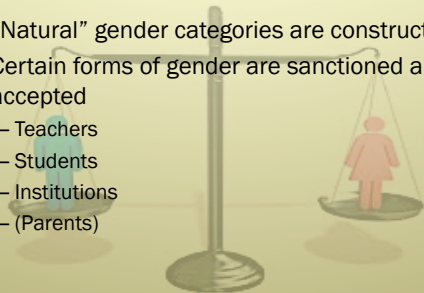
## Gender Neutral = Gender Blind

- Gender parity in all STEM fields is a remote goal
  - Girls are interested and have the ability
- Think differently about the problem
  - Individual
  - Institutional
  - Cultural
- The Real Challenge
  - Implied understanding and expectations of STEM disciplines as masculine pursuits.
  - Battling the social discourse is a 3-legged stool



## Within Educational Settings

- “Natural” gender categories are constructed
- Certain forms of gender are sanctioned and accepted
  - Teachers
  - Students
  - Institutions
  - (Parents)



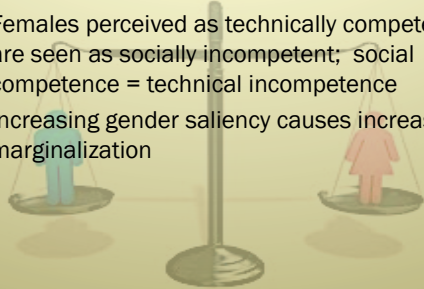
## Within Professional Settings



- Gender divisions produced within schools are reproduced in the professional work force

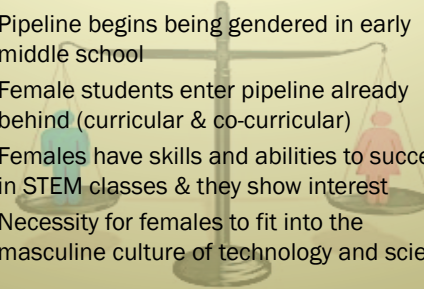
### Gender Politics

- Females perceived as technically competent are seen as socially incompetent; social competence = technical incompetence
- Increasing gender saliency causes increased marginalization



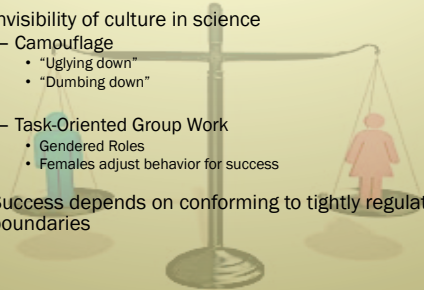
### Gendering of the Pipeline

- Pipeline begins being gendered in early middle school
- Female students enter pipeline already behind (curricular & co-curricular)
- Females have skills and abilities to succeed in STEM classes & they show interest
- Necessity for females to fit into the masculine culture of technology and science

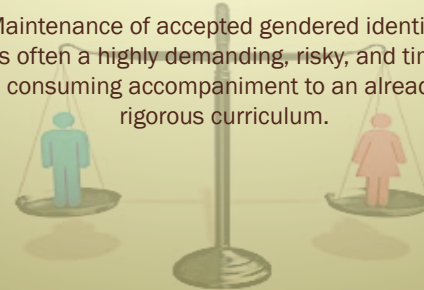


### Strategies for the Pipeline

- Invisibility of culture in science
  - Camouflage
    - “Uglying down”
    - “Dumbing down”
  - Task-Oriented Group Work
    - Gendered Roles
    - Females adjust behavior for success
- Success depends on conforming to tightly regulated boundaries

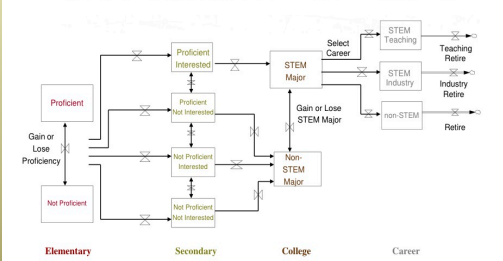


Maintenance of accepted gendered identities is often a highly demanding, risky, and time-consuming accompaniment to an already rigorous curriculum.



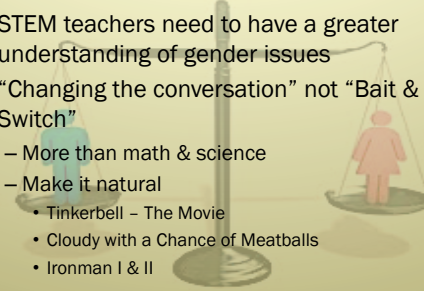
### Gender Blindness in STEM

Figure 2: Simplified Representation of the BHEF U.S. STEM Education Model



### Where to go from here

- STEM teachers need to have a greater understanding of gender issues
- “Changing the conversation” not “Bait & Switch”
  - More than math & science
  - Make it natural
    - Tinkerbell – The Movie
    - Cloudy with a Chance of Meatballs
    - Ironman I & II



## Where to go from here

- Integrate feminist/critical pedagogy into the classroom through socio-science curriculum
  - Reduces science/math anxiety
  - Reveals politics of science and technology
  - Provides an accessible social context for science
- Provide alternative routes to STEM
  - Science is not just for the intellectually elite
  - Destigmatize remedial/developmental courses
  - Balance out disparities of K-12 educational settings

*Effective STEM education strategically assists students to achieve authentic identity development alongside increasing their technical skills.*

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## Questions?