



A New Hampshire e-Learning for Educators Online Professional Development Course

Course: **BP-16 Understanding Gender Equity Issues in STEM Education**

Instructor: Instructor email address phone number

Course Description This course is designed to inform both teachers and administrators about general issues of gender equity in science, technology, engineering and mathematics and ways in which to increase the opportunities for girls and women in your school STEM programs. The course uses resources from STEM Equity Pipeline Project which is sponsored by National Alliance for Partners in Equity. Throughout this course you will explore the issues surrounding equitable academic opportunities for girls and women in the STEM areas and become familiar with the process you can use in your schools to help build, support, and sustain the involvement of girls and women in STEM courses and career pathways. As a final course project, you will design a plan for improving gender equity throughout your school, district, or SAU.

Unit 1	Orientation: Making Yourself at Home in an Online Course	dates
<p>As an orientation to the course, you will be introduced to the online course environment and review some basics that enable successful learning in the online environment. You will explore the course environment and try out various features that you will be using to access the course content and engage with your classmates. You will also become familiar with issues in gender equity that are common in schools today. As we go through the course, we'll focus our attention on the areas of science, technology, engineering, and math (STEM), but these issues, and their solutions apply to all content areas and vocations. You will review some best practices for equitable teaching and start your own self examination of your teaching practices. Finally, you'll set goals for your own expectations in this course.</p>		
Unit 2	Understanding the Gender Gap in STEM Related Fields	dates
<p>The gap between boys and girls in math and science has been studied for many years. While the gap between boys and girls is getting smaller, boys still outscore girls on standardized tests for math and science, while girls outscore boys in verbal language and writing. The result is an under representation of women who pursue high level careers in math, science, technology, and engineering. In this unit you will get some background on the current status of women and girls in academic and career preparation programs at the secondary, baccalaureate and graduate levels as well as their participation in the STEM workforce in the United States. You will participate in an online discussion about your own experience with women in STEM career fields and what you suspect might be the barriers women are facing to entering these high skill, high wage career fields. As you better understand the barriers women and girls face, you can begin to understand the barriers that may exist for girls in your school.</p>		
Unit 3	The Five Step Program Improvement Process	dates
<p>This unit will provide an overview of the Five Step Improvement Process developed by National Alliance for Partnerships in Equity (NAPE). This institutional change model is data driven process that is designed to lead a team of school staff through the process of identifying gaps in student performance, root causes for those gaps and research-based strategies for closing the gaps. This process has been successfully used by NAPE in its STEM Equity Pipeline project focused on increasing the participation of women and girls in STEM related programs of study. You will learn about each step in the process and consider how it could be applied in your situation to help you discover the most effective strategy to implement in your classroom.</p>		
Unit 4	Understanding and Determining Root Causes	dates
<p>A root cause is an initiating event that triggers a chain of events that leads to a specific outcome of interest. In this Unit you will explore the research based root causes that have been shown to lead to the under-representation of women and girls in STEM courses and careers. Barriers occur in a variety of places, from the individual, to the family, education and career institutions, and in society overall. Understanding the barriers that may prevent girls from participating in and completing STEM related programs of study will help you better implement strategies and programs that remove these barriers and make STEM education and careers more equitable for women and girls.</p>		
Unit 5	Microinequities, Gender Bias, and Stereotype Threat	dates
<p>In this unit you'll explore three subtle causes of Gender inequity. While it is important to understand the institutional and organizational root causes of inequity in STEM programs, it is equally important to understand the impacts our society has on defining and limiting roles, not only for women and girls, but for all representatives of cultural diversity. Microinequities refer to ways in which an individual is somehow discounted due to a characteristic they cannot change. Gender bias is the belief that one gender is inferior to another in terms of a trait or characteristic. Stereotype threat is a fear of exhibiting a characteristic that is stereotypical of one's group. All three of these subtle causes have been shown to effect the way</p>		

genders respond in given situations. Understanding these subtle factors and how they operate, whether on a conscious or subconscious level, will increase your ability to be equitable in your teaching practices. Increasing awareness of these issues will enable you to foster outreach and recruitment of women and girls in STEM related courses and careers.

Unit 6	Promising Practices: Outreach, Recruitment, & Retention Strategies that Promote Equity	Dates
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This unit will introduce you to promising practices for introducing girls to STEM related programs through both formal and informal programs. You will explore research-based practices that have proven to be effective in increasing the interest of women and girls in many STEM related fields. Web based resources that provide strategies for outreach, recruitment and retention of girls in STEM courses and programs will be explored, including implementation manuals and online tools. Both in school and out of school programs will be also be reviewed. You will discover how important collaboration between schools and girl-serving organizations are to increasing equity for women and girls in STEM related fields, and understand how best to leverage resources for their success.

Unit 7	Strategies for Institutionalizing Gender Equity in STEM Education	dates
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When an individual gains a deeper understanding of problems or issues, any resolution or solution is only effective in a limited sphere of influence or arena. True change on an institutional basis are only achieved by when systemic changes are made to our institutional processes. Institutions have their own identifiable practices and root causes that can lead to inequity, just as individuals do. But like the causes, institutional changes have to come from a concerted effort of individuals that form the institution. In this unit, you will explore strategies that enable you to scale up the individual changes you make in your own teaching and curriculum in order to support practices that are equitable and inviting to both genders. You'll explore the process of change, and several models that can be used to institutionalize a change in practices. You'll identify some of the factors that determine which model is best and understand how to use our natural resistance to change to help support the change process.

Course Project

In this course, you can choose between three options for projects, depending on your needs and interests. You should choose the project that will be most useful to your teaching or position. In each of the units, you will be given instructions for each of the three options of project work. You will only need to complete the activities for the Project Option you select. Once you select an option for a project, you should stay with that option. A complete project must include all parts.

Project Option 1

You will complete a "mini 5 step process" within your classroom to see if you can improve the instruction you provide to your students. This project is a bit of action research for you to accomplish. This can be done individually, or in collaboration with a group.

Project Option 2

Set up a wiki on Wikispaces, or PBWiki workspace either for yourself or for a class group all choosing this option. The wiki space will become an online annotated bibliography of web resources dealing with STEM Equity. Each person in the group has to contribute several resources on each of the Units you cover in class. You will start with the course resources for each unit and each person needs to find additional resources to post on the wiki. You can share these resources with your school community when completed.

Project Option 3

Develop a Voicethread tutorial to use with your students that discusses gender inequities and helps them understand the issues and promotes equity in STEM related courses. This can be done individually, or in collaboration with a group.

Course Standards

Course Expectations

This course is divided into seven one-week sessions beginning with an orientation week. Each session includes readings, activities, and an online discussion among workshop participants. The time for completing each session is estimated to be five to six hours.

Your instructor will review and assess your progress throughout the course. At the conclusion of each session, your instructor will update your course Gradebook. It is important to review the assessment criteria in the course rubric that will be used to determine your grades. In short, if you pay attention to the following, you will do just fine:

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1. Make sure you complete the readings each week and do the activities each week. Afterwards, your first posting in the discussion area should make reference to the readings and activities in such a way that your instructor can tell you read the material and engaged in the activities.
2. Make sure you post at least 2 message replies in the discussion area each week, and that each posting contains substantial comments (i.e., a comment like "oh, that's interesting" is NOT substantial).
3. Choose at least 2 different days each week when you will participate in the discussions. We suggest posting at least once within the first few days of the week, with your second post at least two days before the next week begins. If you only post on one day each week, you will not receive full credit because one posting a week does not help the group develop rich ongoing discussions.
4. Make sure you post on time, not after everyone else has moved on to the next week's discussion.

In order to be eligible to receive a **Certificate of Completion**, you must participate in all of the weekly discussions and complete all assigned tasks. Participants will be evaluated on the frequency and quality of their participation in class discussions. Participants are required to post a minimum of three substantial comments for each discussion, including one that addresses the discussion starter and demonstrates understanding of the course/unit concepts, citing examples from the readings. Additional postings should provide substantive comments to other participants, which are thoughtful, relevant, and serve to extend the discussion.

Progress will be reviewed and assessed throughout the course. At the conclusion of each unit, the course Gradebook will be updated to reflect the quality of your participation in the course.

In order to receive a **Certificate of Completion** at the end of the course, you must earn a passing grade of 60% or more in the course requirements, earning at least 150 out of 250 points.

Graduate Credit

If you choose to take the course for graduate credit, there is an additional requirement to complete a Reflection Paper, which is worth an additional 50 points. The guidelines and rubric for this paper are posted in each course. You will need to (a) send your tuition registration form with payment directly to the university graduate studies office no later than the start of Unit 7 of your course and (b) notify your instructor that you have registered for graduate credit. If taking the course for graduate credit, a passing grade is 70% or more, earning at least 170 out of 300 points.