<table>
<thead>
<tr>
<th>Icebreaker</th>
<th>How it Could be Used in Classroom?</th>
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<tr>
<td><strong>Categories</strong></td>
<td>Have the students group themselves by smaller categories like favorite color. This could work in an undergraduate classroom by having them group themselves by major.</td>
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<td><strong>2 truths and a lie</strong></td>
<td>People write down two truths about themselves and one lie. Present the three as facts to the class and the class guesses the lie.</td>
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<td><strong>Fear in a Hat</strong></td>
<td>People write down a fear they have about the class and put it in a hat. The hat is then passed and students randomly draw a fear read it aloud and tell how they would address it. This builds empathy within the group, and I think it would be great in my general education math courses.</td>
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<td><strong>Common Sense Inventory</strong></td>
<td>Create a short five to ten true or false common sense statements about your course. Have students answer and then share in small groups. Once they have agreed on answers in the small groups have the groups share with the class.</td>
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<tr>
<td><strong>Syllabus Scavenger Hunt</strong></td>
<td>Break students into groups with the syllabus and a worksheet with questions from the syllabus. Give the students time to find the answers in the syllabus. In the end this should help bring forth any questions students have about the syllabus and help them to remember your requirements and outcomes for the course.</td>
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<tr>
<td><strong>Finish this sentence</strong></td>
<td>Have students go around the room and finish a sentence similar to &quot;I am in this class because...&quot;</td>
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<tr>
<td><strong>Information card with questions</strong></td>
<td>I have students complete a short information card at the beginning of every semester with the basic information. I then ask them to write on the back the most pressing question they have in their mind about the course. Most are usually &quot;is it hard?&quot; but there are some really good ones in the mix.</td>
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Break students into groups and have them share one thing they learned about your subject area the hard way. These could then be posted on a course page or flipchart and addressed throughout the semester.

Have students come up with a personal slogan to identify themselves similar to what companies use.

In small groups have students share characteristics of the best team they have ever been on and why it was the best. List them on a flipchart on a webpage and refer back to them as group work is introduced to the course.

Lectures- Lectures are perhaps the most used and the most criticized teaching method in higher education. Lectures can be used to deliver information quickly to a large group. I often use lectures to introduce the beginning of a chapter or new material. In statistics, there is usually new vocabulary and notation that is introduced with each unit. Lectures are a good way to get this material across quickly and correctly.

Group activities- Group activities can be as simple as completing a group assignment with informally constructed groups to group projects where each member of the group has an assigned role. One way that I use groups is quick in class quizzes that review previously covered concepts. This week I used this method and then allowed the students to correct the quizzes. Hopefully, it will lead to better grades on the next test.

Games- There is an app called Socrative that allows you to use smartphones, tablets, laptops, etc, as clickers. One of the ways to administer the quizzes is a game where rocket ships race on the screen to the finish line. I have found that clickers and these types of applications are more effective ways to conduct test reviews than just working the problems on the board for them. Using these response systems allows me to see which problems that I need to review with the class while the game model seems to make it more fun and motivate the students to participate.

Online learning- Online learning seems to be the wave of the future. Online learning has many benefits. Students can complete assignments when it is convenient for
them. Students often have to work harder to gain information through online courses than in an on-ground course. The learning in an online course is self-motivated and requires that the student be an active participant. In online courses I use discussion boards and email to communicate with my students. The discussion boards also help the students build connections with each other. In statistics, I have use PowerPoint printouts, videos, online homework assignments, reading quizzes, and review quizzes to deliver the content in multiple ways and engage the students in the learning process.

**Demonstration of an Online Unit**

The screenshot above is the content outline for my online statistics course. It is divided up into three units. Test 1 is the first unit. I provide the online students with a list of the objectives for the unit that is tied to the syllabus for the course. For each chapter there is a PowerPoint to print and read, a reading quiz, and homework. I have tried to include helpful videos from YouTube and TeacherTube in appropriate places throughout the content. Before the student comes to take the proctored test on campus there is a practice test and sample of worked out problems similar to what they will see on the test for provided for their benefit.

**Teaching Materials**
- **A course outline**- We were required to develop these several years ago for each of the course that are offered in the department. These outlines include the learning outcomes, topics, and description of the course. They also provide guidelines for percentages of total grade that should be associated with tests, quizzes, homework, and projects and the total number of tests. These outlines have proven to be invaluable to our new faculty members and adjunct instructors for guidance.

- **Resource books**- In mathematics there is usually a required text, but if this is not the case then the instructor will need resource books or materials that will provide practice problems for assignments and examples for the students.

Before you begin teaching a course I recommend that you develop:

- **A detailed course syllabus** that will serve as a guide to both you and the students of what is expected.

- **A course calendar** that outlines all of the course meetings and what you expect to cover in each. I do not believe that this should be written in stone, but it should serve as a guide so that you do not become one of those instructors that cover five chapters in the last two weeks of class.

- **Assignments and assessments** that you will use throughout the semester to assess the students progress.

- **Notes, presentations, and/or activities** for at least the first unit of material that you are going to cover should be developed before the classes begin. At a minimum in a regularly schedule class you should stay at least a week ahead of the class. For online courses most if not all of the course should be prepared before the students start working in the course.

**Open Education Resources**

- **World Data Bank**- [http://data.worldbank.org/data-catalog/](http://data.worldbank.org/data-catalog/) - This is an open resource to that has data sets from all over the world. Real world data sets make exercises more relevant to the students. This site may require some browsing, but many data sets are downloadable in excel format.

- **Kahna Academy**- [http://www.khanacademy.org/math/probability](http://www.khanacademy.org/math/probability) - These are videos on virtually any math topic (of special interest to me) and many other subject areas. The video lessons also have practice exercises associated with them. You can
attempt the problems multiple times, and view solutions in a step by step format. The videos are a talking voice with accompanying whiteboard illustrations that may also include pictures. The voice is not a monotone voice, but an energetic explanation of the topics covered. These videos can be very useful to students trying to master new topics, but the practice is limited and the exercises are simple examples from what I have observed.

- **Wolfram Alpha** - [http://www.wolframalpha.com/](http://www.wolframalpha.com/) - This site is an excellent resource for math students, but if used incorrectly could inhibit their learning process. I like this site because it tells them everything they might want to know about a function or mathematical equation. I have issues with this site for the same reason. If the students use it to check their solutions to problems, then I think it can be a great resource when doing problems at home. However, I do not like the fact that only basic information is free, and the app is not free for iPads or tablets.

- **Merlot** - [http://www.merlot.org](http://www.merlot.org) - This is a store house of educational resources and learning objects that can be use for online learning. There are some excellent resources here to make your online course more interactive and engaging. The only problem I have with this site is that it is like walking into a large discount store. I love finding bargains in these stores, but they overwhelm me when I walk in the door. This site is overwhelming in the pure number of objects available, but if you don't mind the hunt you will find some excellent ones.

- **Community College Consortium for Open Educational Resources** - [http://oerconsortium.org/discipline-specific/](http://oerconsortium.org/discipline-specific/) - This site gives access to open textbooks by subject area. I have found several good resources for statistics on this site including simulation applets that can be used in class. Bad news is that they use codes to distinguish how open the resources are for educational purposes, and there is not rating system that is viewable from the list of resources. There are reviews that can be viewed individually.

**A Sample Syllabus**

**Assignments**

- A sample homework activity
- A sample group activity