NUKING BOREDOM AND DETERRING BURNOUT
Three Approaches for Nonproliferation Education

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Since the James Martin Center for Nonproliferation Studies was inaugurated in 1989 here at the Monterey Institute of International Studies (MIIS), more than 350 students have earned the Certificate in Nonproliferation Studies. Additionally, over 200 individuals from various countries have spent some time at CNS as Visiting Fellows, and many others have participated in CNS Train-the-Trainers Workshops and other educational programs. It's been my honor and pleasure to work with many of them as a teacher and in various other capacities, and it has been an even greater pleasure to work with our students as Chair of our new M.A. degree program.

It would take more space than I have here to go over everything that CNS and its partners have done to build up and deliver its various programs and to outline how we plan to maintain our position of leadership in nonproliferation education, but there's no need for me to that, because the best evidence of the success of our programs is in the person of our alumni and our students who have benefited from our courses, internships, and other programs. If you would like to see the final result of our programs firsthand, you could do no better than talk to them.

So instead of going through our program point by point, I'm going to focus on educational methodology and talk about three approaches to teaching that I've learned from over 20 years in higher education. Most of these, by the way, I've had to learn on the job. When I got my graduate degree at a major research university (I won't tell you the name, but its initials are UCLA), the only teacher training I ever received was a video on how to use a blackboard. I'm going to use some educational jargon to describe these approaches, but I promise to give translations from educationese to plain English. The three principles I'd like to share today are: 1) If you're not having fun, they're not having fun, 2) Make them do the work; and 3) We're not living in the Middle Ages.

Let's begin with the first lesson: If you're not having fun, they're not having fun. Seriously, this is the most important lesson I've ever learned about teaching. A few years ago, a good friend of mine who is a psychologist was teaching a human sexuality course at one of our local colleges, and she was really struggling with it, really having a hard time, putting a lot of work into it, and not getting good results, and it was really frustrating for her. So I said to her, "Look, I teach about nuclear weapons, and I love it. You teach about sex, and you hate it. What's wrong with

this picture?" (I was going to title this paper "Sex and the Single Bomb" but I thought that might send the wrong message.)

Now obviously there are some things about nonproliferation, or any subject we teach—including sex—that are not inherently exciting. But if we as teachers emphasize what we find exciting about the subject, or how we can apply it to make the world a better place—in other words the things that drew us into this field in the first place—we model a positive attitude that will encourage commitment and achievement from our students. That's very important, but it's also important to really enjoy what goes on in a classroom environment. Now this is most likely to happen when a teacher discovers and develops an individual teaching style and adapts the content and design of the course to his or her unique style and strengths. And all of us are teachers in one way or another; we all play some educational role, whether as classroom teachers or mentors for interns or junior staff. So whenever you do any teaching, don't feel as though you are a prisoner of the content, don't feel that because the course has always been taught in a certain way that you have to do it in that exact way because the content dictates it. Instead, remember that teaching is an art form and a teacher is an artist, so use your skills and talents to bring the subject to life for your students. Because if you enjoy the time that you are spending with your students inside and outside the classroom, you will encourage them to put more effort into their courses and you'll get better results from them.

Which leads me to my second point: Make them do the work. A lot of educational research emphasizes the benefits of what is known as active learning or participatory learning, as opposed to other learning strategies. But the point I want to make is that *all* learning is active learning. "To learn" is an action verb. All learning involves activity and without activity there is no learning. We're all familiar with the concept of active listening, but we may not think of reading a book or watching a film as active occupations. But in reality we are actively reading the words, actively processing the images, analyzing and evaluating the information we're taking in. We're thinking about how it fits with what we know, and how it doesn't fit in, and how it reinforces or challenges what we already know and believe. When we do that with a film, or a website, or the play we're going to be seeing on Saturday, or with our experience at work, we are actively learning. And with recent advances in medical imaging, we can visualize mental activity—we can actually see the brain working. Visualizing and mapping brain activity remind us that learning is always an active process. It uses energy and takes work. Which, by the way, is an important reason why adequate nutrition is necessary for learning, as anyone who has worked in K-12 education knows very well. So all learning is active learning and no learning occurs without action.

But what kinds of action should our students take to maximize learning? Active reading, listening, and writing are not enough; we should demand more. In many traditional classrooms students receive content from readings or lectures or other sources specified by the instructor, which they are expected to absorb and integrate into an outcome such as paper or exam, which the instructor evaluates. In this methodology there is an exchange of knowledge, but most of it occurs between the instructor and the students on an individual basis. There is however a teaching strategy called content creation in which the instructor requires students to seek out

and acquire information, skills, and ideas from a variety of sources source and integrate them into a learning object which can be shared with the whole class or even beyond the classroom. In other words, students are responsible not just for receiving the content of the course, but also for producing and sharing it. Many of our most successful courses at MIIS, and others that have been mentioned in other papers in this collection, use variations on this strategy. The simulation courses that Scott Sagan and Bill Potter discuss in their papers are great examples because students create and share many forms of content in those courses. When you ask former students about those courses, many of them say that they have never worked harder in an educational setting in their whole lives, and that they never learned more. That's a strong correlation.

Simulations of those kinds require a lot of work not only from the students, but also extensive preparation from the instructor. So teachers should be careful, because if you are doing more work than your students, you are working too hard. If you really find that as a teacher you are putting hours and hours into preparation, and spending more hours putting your lectures or presentations together, or designing other activities and the students just come in and quickly go through them, you are probably doing more work than your students. And that's a sign that you may want to reevaluate how to do things. But the main point here is that with strategies like content creation or inquiry-based learning, you first introduce students to the content, say for example the Treaty on the Non-Proliferation of Nuclear Weapons, and then you require them to ask questions about the content, but you don't answer the questions at first. You have them look for answers outside of class, individually or in groups, and present their findings to the rest of the class and then open things up for discussion. That's making them do the work, involving your students not just as learners but also as teachers. I had the opportunity to redesign our Introduction to WMD Nonproliferation course along those lines in 2009 and I was very impressed with the results. Teams of students chose not only what questions to ask to enrich the content, but also the format in which they would share the results with the rest of the class, and they really took advantage of the opportunity to be creative in their presentations. For example, one group performed a dramatization of Hans Blix's visit to North Korea in the style of the film *Team America: World Police*, in which, for those of you who haven't seen it, they do things with puppets that puppets shouldn't do. Now, the student playing Kim Jong-Il didn't dump Blix into a shark tank like he does in the film, but I bet the other students retain more about what Blix found out about North Korea's program than they would have if I had read from a Powerpoint presentation.

Talking about technology leads me to my final point: We're not living in the Middle Ages anymore. As some of you may know, the word "lecture" comes from the Latin word for reading, and that's exactly what it started as. Back in the Middle Ages, when universities were first developed, hardly anyone could afford books. Books had to be copied out by hand, they were extremely expensive, and medieval universities, even the well-funded ones, would have one or two copies of a text. There was absolutely no way for students to get access to these books on an individual basis. So students would all gather together to listen to a lector read from that text. That's what a lecture originally meant. At the same time, learning at all levels emphasized memorization, because there was no means for just-in-time delivery of information. So the

students had to memorize very long texts, including epic poems like the *Iliad* or the *Odyssey*, because that was the only way you could make information accessible when it was needed.

We don't need to do that anymore. Information technology offers teachers and students a huge number of ways to get content into the classroom, provide opportunities for learning anytime and anywhere, and enliven and enrich the educational experience both inside and outside the classroom. Most of our students, though not all of them, are so-called millennial learners who have grown up in a technology-rich environment. They have a mobile phone or other digital device in reach at all times, and no matter what they are doing, they are always tweeting or texting someone and getting messaged back. They spend a typical evening at home time-sharing their attention between a computer, a TV, an iPod, and a smart phone. They are overloaded with information, communication, and entertainment, all running together. So technology not only affords ways to get high quality content into the classroom, it also creates many more ways of being distracted and to encounter misinformation. There's no way around this, we just have to learn to deal with it. But this is nothing new; back in the old days, students used to daydream in class and pass notes, now they surf the web and tweet each other. Back in the days before Internet, which might as well be the Middle Ages for today's students, if one of the facts in an instructor's lecture seemed questionable, we would have to go to the library, find one of those ancient wonderful things called a book, check it out, look it up, then go to the subsequent class, and wait for the teacher to call on us, and only then could we say "I'm not sure if what you said was accurate." Now, if you get a fact wrong, a student will correct you instantly. It happens all the time and we need to recognize it as a positive development. A well-designed learning experience is a 360-degree experience; we learn from our students while they learn from us. Everyone is participating in learning, which of course means that everyone is participating in teaching as well.

Technology therefore creates both opportunities and challenges. Some people hate Powerpoint, and when they ask me why I use it, I answer that I have really terrible handwriting, so anything I write on the board would be illegible. But I've found that it really helps in a number of ways. First of all, we all have different learning styles. Some of us are visual, focusing on diagrams and images, some of us learn in an auditory manner, by hearing words. Some of learn most effectively by reading and writing. We want to facilitate all those styles of learning in our classrooms because everyone has a different style of learning. There are plenty of ways to do that and its becoming easier and easier with the integration of technology into the process of teaching and learning. But remember that as a teacher you are an artist, so it's important to develop a style of using or not using technology that fits your style of teaching. Now that could range from banning all laptops and cell phones in the classroom, to requiring all students to have laptops or mobile devices. Instead of showing students a pre-selected set of images and texts, we might say, "Go find me various definitions of terrorism and we'll all evaluate them critically."

So we can choose from a wide range of options. We've experimented with many of them, and we hope to use more and more of them in the future to reach learners with nonproliferation education not just here in Monterey, but on a global scale. But always keep in mind that

teaching is an art form. Just as every artist needs to choose what kind of media to work in, whether it's watercolors, or oils, or sculpture, so every teacher needs to find his or her favorite media and utilize them, even if that means getting medieval on your students and giving them a lecture.

There's an important parallel here between information technology and with nuclear or biological technology: we can't put the genie back in the bottle. We have to recognize that while we can try to ban technology from our classrooms, the global enterprise of learning is occurring in a technology-rich environment. Just as one of the missions of nonproliferation is to allow us to take advantage of the benefits of nuclear technology or biological science while minimizing their inherent risks, we as teachers need to do something similar in today's technology saturated educational environment. It's our task to maximize the benefits of technology minimizing the distractions. In this way, we can model nonproliferation education, providing examples how everyone can directly contribute to the nonproliferation mission.