

**Bonni:** [00:00:00] Today an episode number 135 of the Teaching in Higher Ed podcast Sarah Rose Cavanagh shares about the spark of learning energizing in the college classroom with the science of emotion.

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**Bonni:** [00:00:27] Welcome to this episode of Teaching in Higher Ed. I'm Bonni Stachowiak and this is the space where we explore the art and science of being more effective at facilitating learning. We also share ways to increase our personal productivity so we can have more peace in our lives and be even more present for our students.

**Bonni:** [00:00:55] Today I welcome to the show Sarah Rose Cavanagh. She is currently on the faculty at Assumption College where she directs the Laboratory for Cognitive and Affective Science. She also serves as an Associate Director for Grants and Research in the Center for Teaching Excellence. Her teaching focuses on emotion, motivation and neuroscience says research considers whether the strategies people choose to regulate their emotions and the degree to which they successfully can accomplish this regulation can predict trajectories of psychological functioning over time. Sarah's book *The Spark of Learning: Energizing the College Classroom with the Science of Emotion* is part of James Lang's series on teaching and learning in higher education. Sarah, welcome to Teaching in Higher Ed.

**Sarah:** [00:01:51] Thank you. Glad to be here.

**Bonni:** [00:01:53] I told you I read your book on an airplane and it was a wonderful treat for me. It's always hard whenever I get a chance to read the author's books before they come on the show. There's so much I'm excited to talk to you about. Let's just start out with. Could you share a little bit about why you decided to write a book about emotion? Where did that come from?

**Sarah:** [00:02:14] Well actually I am an emotion scientist by trade. I am rather new to faculty development and teaching and learning pedagogy literature. And so my research interests have always been in emotion. And James Lang who is the editor of the series my book came out and approached me about writing a book. And so I started thinking about teaching and emotion and teaching was the natural approach for me to take.

**Bonni:** [00:02:40] And is it something that you always saw showing up in your classroom because that was your background? And an extension to that is what has been other faculty who don't have that expertises reaction to this topic?

**Sarah:** [00:02:54] Well I think that I had always thought about emotion and the choices I made in terms of the activities and assignments and how to frame a lot of what I do in the classroom. And it was sort of a realization that that was the case as I started looking at the literature. And the reason why you would make those choices I realized that I had been doing that all along and terms of reactions. I think that some have gotten a lot of warm reactions.

[00:03:22] When I do encounter skepticism, it's usually around this idea that thinking a lot about student engagement. And we had talked about this you and I briefly before is thinking about student entertainment. I sometimes encounter kind of a knee jerk reaction to thinking about emotions in the classroom as in, "I'm not there to be an entertainer. I'm there to help students learn."

**Sarah:** [00:03:45] And as I'm sure we'll get to in the rest of our discussion. I feel that caring about student emotions and caring about student engagement is in some ways the first step. But if they're not caring about material and are motivated to learn by then it almost doesn't matter what anything else you do. You need to encounter that first step and master that before you can challenge them and to greater heights of learning.

**Bonni:** [00:04:11] That reminds me so much of the quote that you used from Elaine Fox when she says "emotions are at the heart of what it means to be human.? Why does that resonate? Why does that resonate with you so much?

**Sarah:** [00:04:25] Well I think that emotions really evolved to prioritize and inform our priorities that they push us toward things that are important and healthy and good for survival. And they push us away from things that are the opposite and they also tag information is important to remember. And so we think that in our

deepest relationships and mentoring and in learning all of all of the rounds of our life really emotions inform that which is important to us. And and in doing so really defines our humanity.

**Bonni:** [00:05:05] And what are some of the ways that you've found the emotions enhance learning that you personally have found to be most powerful in your teaching? Feel free to give any examples from your own classes.

**Sarah:** [00:05:16] Right. Sure. And I think I'll start with the science of it and this is really the core idea I think that I argue in the book is that if we look at learning and we break down what you need in order to learn something new you need focused attention. You need successful memory consolidation. You need to store it in your memory stores and then retrieve it. And you need to be motivated to do those two things.

**Sarah:** [00:05:39] And we know from all of our emotion science that emotions grab our attention that they enhance memory. That memory for emotional versus neutral material is one of the most reliable findings in memory research and that emotions also mobilize motivation. And so the components of learning are all tapped into by emotion and and so thinking about that as you design your classes and and your assignments and all the rest is really important.

**Sarah:** [00:06:11] And I think that in terms of specific examples I talk a lot in the book about Reinhard Pekrun's control value theory of academic emotions. And he talks about the fact that you can maximize student learning if you give them control if you give them autonomy and make them feel like they have their own choices and that they're guiding their learning.

**Sarah:** [00:06:33] And also if you maximize the value or the purpose that they see and their material and I think always thinking about you giving students autonomy in terms of choices you've given them a choice of assignments or a choice of essay questions giving them choices in terms of how to shape what kind of presentation or paper they're going to be writing is going to maximize that autonomy and I try to do that in my own classes.

**Sarah:** [00:07:01] And then in terms of value I think one of the easiest things in order to maximize value is to think about what relevance the material might have for student's personal lives for their longer term careers or a more transcendent purpose. Angela Duckworth has some great ideas on highlighting transcendent purpose of learning how that learning is going to contribute to

making the world a better place. Any of those types of value will motivate and mobilize student efforts.

**Bonni:** [00:07:33] Can you give an example either from your teaching or from one of the many faculty I know you've coached just in terms of this choice of assignments or choice of essays? Just a specific example of that.

**Sarah:** [00:07:44] Sure. I think that in the book and in an essay I wrote for [The Chronicle of Higher Education's] Vitae, I talked about in my own experience as a student rather than in my own experience as a teacher. A professor I had at Boston University... She shaped our entire semester around the concept of choice and we had to do three assignments that would make a portfolio that would then be what was graded for our final grade and we could write papers we could do a poster session and we could conduct case studies or interviews. It was a developmental psychology course and we could do almost anything.

**Sarah:** [00:08:23] And I was a little alarmed at that as a student and a little anxious. But once I got through that and then got over that hump of anxiety it really was some of the best learning experiences that I had that I could craft my own education in a way.

**Bonni:** [00:08:39] Do you get the concern about assessment when you start bringing up the potential for giving students more choice? "How do I build... Do I build a rubric for every choice that's out there?" Or what sort of guidance do you give in terms of thinking about assessment as we give more autonomy to our students?

**Sarah:** [00:08:57] Right. That's a great point. And I as a professor would probably shy away from that approach. That sounds a little too loose for me and for the grading rubric reason and many other reasons. But I think allowing students to choose between say a presentation or a paper and they can choose one that they're more passionate about that they feel like they have better skills for...

**Sarah:** [00:09:18] I think also even as simply you know kind of a small change would be exams giving a choice of essays so that students and I talk a lot in the book about reducing anxiety as well and this would help with this. They could choose between two out of three essays so that there isn't that chance that you just somehow missed a batch of material or didn't realize that it was important to the professor and didn't study it at all and then you get to the final exam and it's 20 points out of your final exam grade. Instead, having you know choose two of

these three essays that are all important is a really small way that you could maximize choice.

**Bonni:** [00:09:56] Yeah especially as oftentimes the essay question might reinforce or ask them to demonstrate the same kind of learning outcomes. To give them that choice, it sounds like perhaps even thinking about the context of the questions might be different and it might be a context that they're more familiar with and the one that they choose. Yeah.

**Bonni:** [00:10:14] There's another set of tools I wanted to just mention the there's a long acronym so forgive me everyone... They're called the VALUE rubrics from the Association of American colleges and universities and VALUE stands for valid assessment of learning and undergraduate education.

**Bonni:** [00:10:32] And it's a whole collection of rubrics that you can use as they are or you can customize them for yourselves but they look at different types of skills that so many of us are trying to build in undergraduate education and they might be a good starter point if you were trying to give some choice and then measure things around critical thinking creative thinking written communication oral communication and quantitative literacy and so on and so forth that just put a link to that in the show notes.

**Sarah:** [00:11:01] That sounds fantastic

**Bonni:** [00:11:03] [teachinginhighered.com/135](https://teachinginhighered.com/135) in case someone wants to explore that a little more. I mean of course love to hear from you too if you're finding other ways to assess giving the freedom of choice. I was really inspired by the episode I recorded with an anthropologist Mike Wesch and he gives a lot of choice to his students. But I will leave those interviews going, "Ok. But then how do I you know make it not this experimental? How do we bring it down to something and try something new for a new semester? So right. Yeah.

[00:11:36] Well let's talk a little bit then about emotions as it relates to cognitive load. What can you tell us about that connection?

**Sarah:** [00:11:45] Great. So cognitive load theory suggests that we have limited cognitive resources which is something that we definitely know we only have so much attention and attention is like a small spotlight. We only have so much working memory we can only hold on to so many bits of information and current legwork on it. And our working memory.

**Sarah:** [00:12:05] And so if those resources are limited at any moment in time then students in the classroom those resources are getting divided. They need to dedicate some resources to whatever just processing what is being asked of them. So figuring out what the math problem is or what supplies they need to conduct a lab. So some of it called intrinsic resources some of that is going to be directed just to doing that.

**Sarah:** [00:12:33] And then a big chunk is going to be taken up by the process of learning actually doing the learning and then the third batch is going to be extraneous. And so their text getting text in their pocket and about their evening coming up you know anything that's kind of distracting from the task at hand is also going to soak up some of these limited resources and what emotions can do in the classroom is focus the students engagement and their motivation so that they're dedicating more of their cognitive resources toward figuring out the problem and learning.

**Sarah:** [00:13:12] And fewer of their cognitive resources to those extraneous distractions. And if they're bored, they're going to be spending more time on extraneous you know kind of things to distract them.

**Sarah:** [00:13:25] And if they're highly anxious then they're also going to - their worries are going to soak up a lot of the resources. And so by reducing negative, distracting emotions like boredom and anxiety and maximizing positive emotions like interest and curiosity then we can hopefully have them direct more of their resources to learning which is going to aid the learning.

**Bonni:** [00:13:51] Sometimes the critique that I will hear when we start talking about this is just the thought of - to what extent are we as learners responsible for managing our own boredom? Overcoming our own boredom? And I can remember that I always valued that my mom taught us how to never be bored because you could never be bored as long as you had a mind to you know think about things and take you places. As long as there were books around you know that sort of thing. So what how do you sort of balance that in your own thinking? How much of this is our students responsibility how much of that is the one who's facilitating the learning?

**Sarah:** [00:14:27] Well I think that our job as instructors or professors or whatever our role is - is to help students learn. Give them every tool that they that we can in order to help their learning. And so it doesn't bother me to think about - how can I maximally motivate my students and my reduce boredom and anxiety?

**Sarah:** [00:14:50] I see that as part of my role. It's interesting the question you ask and because I have a grant funded study from Davis Educational Foundation and that study we're using iPads to give students a five minute intervention at the beginning of the class to manage their boredom and anxiety and frustration and to give them some tools from emotion science and from mindfulness in order to kind of attack those negative emotions that will distract them during the process of learning.

**Sarah:** [00:15:23] And our hope is that that will be kind of a blend of both. So we're giving them the tools or giving them I-pads and the information but then they'll be doing the work of it. So we tell them about you know how to approach anxiety with mine from there. But then during the class I hope is that they will then apply those tools to reduce anxiety and that will benefit learning. And so that is somewhat putting it more in the hands of the students but also giving them some assistance and getting some mentorship and how they might reduce their own sort of an anxiety.

**Bonni:** [00:15:56] Yeah one of the things - and by the way I don't make the argument very well because I'm completely on board with you in case you can't tell. It's so much more fun to teach that way too when you think about the possibilities because it's it's gives us more of a sense of purpose but it's also more fun... To think about it....

**Sarah:** [00:16:12] Right.

**Bonni:** [00:16:12] The kinds of creative ways we could use our teaching to do those two things. But at any rate I what I hear you saying is also, yes let's help to give some tools to remove the boredom to lower the anxiety but also to be expressing why it is we're doing what we're doing to be tolerant very transparent about what our purpose is and that.

**Bonni:** [00:16:36] And I suppose that may help a little bit remedy to - I'm not here (I wouldn't phrase it this way but) - I'm not here to entertain. That's not the purpose I'm going to be expressing, but I'm going to be expressing that that these are the kinds of things that they could do to help in their own learning.

**Sarah:** [00:16:51] Right and I also think that it's a lot - and a lot of the ideas that I talk about in the book that I aren't my own. I took from other people with them - a lot of thinking about this is that some of the best ways that we can motivate students is to push them really to the outskirts of their abilities to really challenge them. And I think that this idea - that anything that we do to motivate is going to

necessarily be frivolous or entertainment really is contradicted by some of the actual techniques and that the best way to reduce boredom is to challenge that. To make them apply every bit of their skill to the task at hand. And I don't think that that's entertainment and I don't think that that's frivolous. I think that that is going to really help their learning.

**Bonni:** [00:17:37] Yeah that's a really good point to bring up just how much harder we do expect ourselves to work and expect our students to learn when when we are challenging in that way. That's a wonderful point. It's not too challenging to sit in a lecture especially one that's completely one sided.

**Sarah:** [00:17:53] Right.

**Bonni:** [00:17:55] Well let's talk about then the really key part toward the end of your book as you start talking about motivation - because this is so key.

**Sarah:** [00:18:05] I think that some of the ways to motivate students are we'd already mentioned so I won't spend too much time on this but the value - highlighting the value of the material. How this material is going to benefit their personal lives their career or the world in general? I think that also some of the most fun I had researching the book was reading some books like Ian Leslie's Curious and this is going to be my recommendation just at the end.

**Sarah:** [00:18:33] And Scott Barry Kaufman's Wired to Create a new more popular press books that aren't designed for pedagogy but yet are about how we take in information and how are motivated to develop new skills and to seek out new information. And you know some of the stuff that came from him from his book that I include is introducing puzzles and mysteries and posing posing what you want the students to learn in the frame of you know either how it was a puzzle for the initial discoverers or it is still a conflict and a mystery in the field.

**Sarah:** [00:19:13] And initiating them as partners in solving those puzzles and those mysteries, I think, can really engage curiosity and engage creativity and get the students motivated to figure it out because everybody loves mysteries and puzzles and solving a problem. And then it also has that double edged benefit of being rewarding when you get to the answer or you feel like you've contributed a step toward understanding a mystery.

**Bonni:** [00:19:44] I'm pretty sure that at that point you also gave a couple of examples from James Lang's Small Teaching book and one of the things I really enjoyed and again I think you mentioned as does he talking about the



importance of prediction and allowing our students to predict what might happen.

**Sarah:** [00:20:04] Yes.

**Bonni:** [00:20:04] I'm going to link to this in the show notes. There's a wonderful episode by Planet Money which talks about currency and I can't remember which. Which country is even going to embarrass myself enough to guess but I'll put it in the show notes so people are able to find it. But it was with a place where currency is - price stability is very unstable and is kind of what the government there decided to do about it.

**Bonni:** [00:20:30] And it's such a wonderful thing to just tell the first part of the story through this podcast it's a very short one. And all the episodes are only 15 or 16 minutes long and then stop it right at the point that they're trying to decide what they're going to do and then let the students predict and it's pretty it's pretty spectacular to me that much of the time they don't come up with the "what really happened" but they come up with some really creative ideas that are really actually related to types of solutions around currency it's just kind of neat to be able to tap into their natural intuition because these are students who haven't taken economics classes before.

**Bonni:** [00:21:06] And then occasionally some students will actually land on what the country decided to do. It's really really fun and by the way so it's talking about kind of the mystery What are some other disciplines specific examples that you've come across in terms of this creating the sense of mystery or prediction?

**Sarah:** [00:21:23] I think one example of a great immersive way of introducing curiosity is Mark Carnes' Minds on Fire and his approach. That's the name of his book and his approach is reacting to the past in which he has his students go through preform all role plays of historical events and from the accounts that I've read of it students are still motivated that they meet on weekends and they go outside the reading material for the class and really are engaged and motivated and a really wonderful way.

**Bonni:** [00:21:54] Yeah I had him back on the podcast all the way back in Episode 21 so I know a lot of people haven't been listening but that was October 30th 2014 but I'll put a link to that in the show notes because he is so innovative and he was always quick to correct me. It's not just him.

**Bonni:** [00:22:09] There's a whole collection of all these professors from all over that are coming up with these role immersion games to play with students and the big movement. Yeah it's incredible. That's amazing. Well anything else you want to make sure and stress regarding the importance of motivation and thinking about how emotion connects with it.

**Sarah:** [00:22:30] One thing that we didn't touch on too much and this may activate some of the engagement/entertainment critics but that was really interesting to me as I did the research for the book is the idea that teaching is a performance profession. And I think it was Doug Lemov who said that originally. And that it does matter how much energy and enthusiasm and warmth and eye contact. From multiple different sources of research this idea of immediacy cues - and immediacy cues just being how in the present moment you are - seeing things, again, like gestures, walking around the classroom, making eye contact, that those those things communicate how interested you are in the students and how interested you are in engaged in the task that you're doing together in a classroom. And that it does matter to think about those things.

**Sarah:** [00:23:26] I think that we like to think that we're just brains who enter a classroom but we're not. We're people and we're engaged in a social endeavor. And how much energy and thought and enthusiasm we put into our performance really has a lot of impact on student motivation and how much they learn.

**Bonni:** [00:23:45] If that's an area that I'm particularly challenged by and you're not saying this but I'm going to go ahead and say - if you're a high critic of this it might be something that possibly that is an area where you might think about your own professional development. Where's a good place to start? Is it better to try to change something about my own performance or is it better to try to draw from sources that are out there to sort of bring them into the classroom or am I presenting you with a false dichotomy? [laughing]

**Sarah:** [00:24:17] No I think I think both could be great. And I think that's two things. One being that (this is not my idea, again) to have someone videotape you. Some colleges offer this service so that you can watch yourself and then target certain behaviors that you think are portraying non immediacy.

**Sarah:** [00:24:41] And I think the other bit is again mindfulness and I find this I have to do this in my own teaching. It's very easy especially if you're taught a course you know many many times to just kind of go on autopilot and not be present. And so to try to bring yourself back to the present moment and focus

on the words that you're saying the student that you're talking to the information that you're trying to convey. Focusing on mindfulness and bringing yourself to the present moment and recurring and bringing your attention back to that present moment. I think to introduce those immediacy cues even if you're not consciously focused on the cues themselves.

**Bonni:** [00:25:19] I'm cracking up at myself Sarah as you're describing this because I'm thinking about OK I want to ask her a question about OK so how early do I have to get to class in order to have my this planned in advance and I'm thinking that's not what she is describing and she's describing in the moment being mindful and here I am trying really hard. It's really hard to do. I'm sitting here trying to map it out and say OK well seven minutes before class. It's real it's tough.

**Bonni:** [00:25:50] All of these things are tough in fact videotaping that something I did when I first started my teaching career which is not was not in academia I was teaching computer classes fresh out of college and if I hadn't actually that was just an audio recording of myself then I would hear it if I hadn't done that. I could only imagine how ingrained some of the really really bad habits I had.

**Bonni:** [00:26:10] And even now still today I always listen to the podcast episodes after they've been recorded although we have a wonderful podcast editor Andrew who makes me sound better than I do on my own so it cleans it up perhaps a little too much for self-correction. But I am always mindful to have the kind of person I want to be in exploring these experts such as yourself coming on the show and trying to help you you know tell your stories in such wonderful ways like you do. What have I not asked you about this fabulous book that we talk about before we get down into the recommendations segment?

**Sarah:** [00:26:47] The last thing there would be and I think you highlighted this already but it's also along with the performance bit and the purpose and value that - the third recurring thing that came out of all the literature that I looked at was the idea of transparency and clarity. And that just being clear about your learning goals for the students, how the assignments fit into those learning goals, how they are going to be assessed, how each bit of this assessment reads to both their grade and your learning goals and how you're going to achieve those and assess those I think is incredibly important.

**Sarah:** [00:27:23] It reduces student anxiety it makes them feel safer and more able to kind of jump in and get involved. And it also is one of those things that makes your semester nicer smoother semester if everything's laid out and

transparent ahead of time than I then you can focus more on teaching and the things that you really love.

**Bonni:** [00:27:45] I think this was something I probably didn't do as well even as recently as a couple of years ago and that's doing this throughout the semester. My syllabus has been complemented by people from near and far in terms of the transparency and the organization has been a challenge for me. But really just the need to throw out so many emotional parts of the semester to remind people why we're doing this right and that we're in this together and how exciting it is to be I mean that to bring that emotion in around the whys... Why is this important? Why are we doing this? Why is it exciting.

**Bonni:** [00:28:21] And and it's not going to feel exciting throughout the entire semester for any of us, but it really does help and I find - not that I did that necessarily for course evaluations - but I have seen a noticeable difference in the students [being] able to recognize why I do the things that I do and it comes out. Just that they're able to see it more when I am transparent throughout the whole semester.

**Sarah:** [00:28:44] Right. I love that.

**Bonni:** [00:28:46] Yeah well this is the point in the show where we each get to give a recommendation or two and I am laughing because I'm going to recommend something that someone else recommended on a podcast. It's all very meta [laughing]. I love it.

**Bonni:** [00:28:59] I love listening to the Political GabFest and John Dickerson is one of the regular hosts on the Political GabFest and he recommended this wonderful interview with someone who I don't know because it comes out of my discipline but he's a mathematician. Andrew Wiles. And he wrote this article called: What does it feel like to do maths?

**Bonni:** [00:29:18] And I'm going to be linking to it in the show notes and one part of the interview really stuck out to me whoever was interviewing Andrew Wiles asks him, "What do you do when you get stuck?" And Wiles replies, "I really think it's bad to have too good a memory if you want to be a mathematician. You need a slightly bad memory because you need to forget the way you approached a problem the previous time because it's a bit like evolution, DNA, you need to make a little mistake in the way you did it before so that you do something slightly different and then that's what actually enables you to get 'round the problem".

**Bonni:** [00:29:57] And I really liked that I liked it for a number of reasons. First of all I have a terrible memory so I thought, "Oh hooray. Let's celebrate that." But also just to be thinking about the importance of reflecting on one's own teaching and one's own sense of purpose and just that when we're doing that regularly - but then also backing away from it for a while in terms of just forgetting about it for a moment - how that can actually enhance our ability to solve problems. I just really thought it was a great interview and that's just one piece of it it's it's just very rich from start to finish.

**Sarah:** [00:30:29] Oh great.

**Bonni:** [00:30:30] Sarah what do you recommend.

**Sarah:** [00:30:32] So mine. I already spoiled a little bit but I have an additional one so I had mentioned Ian Leslie's Curious at a popular press book that is just about human beings strive to know things. And I just loved it. It's has a lot of research in it. But he also is a beautiful writer.

**Sarah:** [00:30:52] And also Scott Barry Kaufman and Carolyn Gregoire's Wired to Create kind of a similar thing. But instead of with curiosity with creativity and how we're driven to create.

**Sarah:** [00:31:08] My final one is Mary Helen Immordino-Yang and she recently published a series of essays called Emotions, Learning, and the Brain. And she really deserves all the credit for this general idea of emotions and education. She is really the pioneer in this work and she's more of a neuroscientist doing the basic science of this work and I kind of took a lot of her ideas she cited throughout my book and ran with them and tried to find practical applications and then also looked at the pedagogical literature for rotations and how people had actually tested some of these ideas in real classrooms. But her book is great and she really wants to find this whole idea of emotions and education.

**Bonni:** [00:31:57] Well Sarah thank you so much for being so generous with your time and it's so fun to talk to you after I feel like I know you because your book is written very transparently just like you recommend all of us in our teaching. You've taught me a lot. And I'm just so looking forward to a continued connection with you and also thanks to James Lang for introducing us. I'm so glad to have had you on the show.

**Sarah:** [00:32:16] Thank you. This has been a real pleasure.

**Bonni:** [00:32:19] What a pleasure it was getting to talk to Sarah and I'm excited for those of you that will consider reading her book. It's a really good one and it's a fairly fast read. And I just encourage you to pick it up if you have a chance.

**Bonni:** [00:32:33] Thanks again for all of you who have been making comments and reviews about the show on your various podcast services. You have yet to do that. I always try to twist your arm at this point in the show and just encourage you to help others discover the show that's the way those algorithms help other people discover the show.

**Bonni:** [00:32:51] And if you have yet to describe subscribe to the weekly e-mail that comes in your inbox just once a week with notes with links to all the things that we talk about this week we'll have a lot of good ones from Sarah. That we talked about during the show. You can do that at [teachinginhighered.com/subscribe](https://teachinginhighered.com/subscribe) and also receive a copy of the free guide the ad tech essentials tools to help you be more productive and also help you facilitate learning through technology. Thanks so much for listening and I will see you next time.

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