Making College "Worth It" – Season 2, Episode 9

Facilitating Reflection in Undergraduate Research

Nolan Schultheis (00:09):

Welcome to Making College Worth It, the show that examines engaged learning activities that increase the value of college experiences.

Jessie L. Moore (00:16):

In each episode, we share research from Elon University's Center for Engaged Learning and our international Network of scholars. We explore engaged learning activities that recent college graduates associate with their financial and time commitment to college being worthwhile.

Nolan Schultheis (00:30):

I'm Nolan Schultheis, a second-year student at Elon University, studying psychology with an interest in law. I'm the Center for Engaged Learnings Podcast producer and a legal profession scholar.

Jessie L. Moore (00:41):

And I'm Jessie Moore, director of Elon's Center for Engaged Learning and a Professor of Professional Writing and Rhetoric.

Nolan Schultheis (00:47):

In this episode, we'll explore a tool for facilitating reflection on an integration of undergraduate research in students' college experiences. We'll talk with Paul Miller, professor of Exercise Science at Elon University and a co-creator of the Fire Toolkit, a free tool available on the Center for Engaged Learning's website. Let's meet our guest.

Paul Miller (01:12):

So I'm Paul Miller. I'm professor of Exercise Science at Elon University. So how I became interested in studying this, I mean, it goes way back actually. So previously I was the director of the undergraduate research program for eight years. I worked a lot with students that I was mentoring in disciplinary research, but I was also interacting with a lot of students who are participating in undergraduate research with other mentors. And one of the themes that started to emerge for me was the students were super and mentors were super dedicated in their specific project, but the students weren't giving. It didn't seem that they were giving a lot of thought to how do these experiences then contribute to my personal growth. They would talk a lot about what they learned about their discipline, but they wouldn't talk very much at all about the things they were learning about themselves or how they grew through the experience until they were prompted to do so, and it was there.

(02:14):

And so unless a mentor or another person that they were interacting with prompted that it wasn't anything that really bubbled to the front. And so we started very early on with trying to figure out how do we do this? Then as my career went on, I joined the provost office. One of my areas of oversight was the Experiential Education Advisory Committee at Elon. One of the things that came up through that experience was what's next for the Elon experiences? And some people would suggest like, oh, we should have a sixth experience. But my take on it was, well, why?

(03:02):

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What are we addressing by doing that? Right? Because all of our students are already satisfying the ELR. So I felt, and through conversation that we had, what unfolded was what's next for the Elon experiences would be maybe this reflective piece and that there's a more pronounced mentoring component across all five of the ELRs. But that has to be prompted. It has to be introduced at some point, even though there's a transition point where you put students at the center of that they have to be the driver of what they hope to get out of it and who they want to engage with, but it has to be introduced. So the interest came in, how do we add depth to that? And then how do you help students then connect that not only to their personal learning, which is hugely important, but also how do they connect that with the other educational choices and other developmental choices that they're pursuing and figuring out ways to make sense of that together as a holistic piece.

Jessie L. Moore (03:59):

And that historical perspective is a great lead into our next question for you because Paul, you and I have collaborated on developing the facilitating integration and reflection on Engaged Learning toolkit, also known as the Fire Toolkit. And we're only talking about one section of it today, but could you give our listeners a brief introduction to what the Fire Toolkit is?

Paul Miller (04:22):

Sure. So the Fire Toolkit, facilitating integration reflection and experiential learning mentoring toolkit really was a way to, I think, formally connect mentoring expectations with our experiential learning. But one of the things that's really difficult in that is how do you get started? Fundamentally mentoring is relationship. And so how do you trade on that relationship to add depth to the student's learning experiences and learning opportunities? So when we started to embark on that, we targeted the five Elon experiences because one thing that we knew that if we wanted every Elon student to have the opportunity to have a mentored experience, what are those touch points? Well, the Elon experience, one of those touch points is every Elon student must satisfy an experiential learning requirement through the Elon experiences. So that was one way we knew that we could make sure every Elon experience had that opportunity or every Elon student had that opportunity.

(05:30):

So that's where it came from. Then as we started to unpack that, we had a planning retreat with the Elon experiences, or the experiential education advisory committee had a planning retreat in January where we started to unpack this a little bit more and came to realize that students are at very different developmental stages, not only in the totality of their time at Elon, but also in their experience with each one the Elon experiences. There may be a first year student that's more advanced in their understanding of study abroad than a senior student. There could be, somebody could have a much more advanced understanding of what they want to get through their undergraduate research experience at a very early time in their educational journey than somebody who's more advanced, who hasn't really thought about it. So what we came up with was an understanding that there has to be some prompts that deal with planning.

(06:29):

So where am I now? So some positionality kind of taking, where am I now? Who am I, where am, what is that I'm about and where do I want to go? But those things have to be considered before you actually do something because a lot of times students would come and they say, well, I'm definitely going to do this experience. And you'd say, why? Well, because everybody else does it. Well, that's an answer. It

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may not be the best answer, but it is an answer. But if we prompt them to think about it, they might say, well, I really thought I was going to do experience A, but I really want to do experience B right now. Truth be told, they probably can do 'em all. And that's the best case scenarios when they can really with earnest plan, this great combination of experiences, but sometimes time runs out.

(07:21):

So how do you make sure that people are pursuing things that are most meaningful to them before the clock expires? And learning is a lifelong journey. They can do some of those things beyond their time here, but the seed has to be planted at some point. So we have a section of questions for pre-experience, right? So as I approach the experience, what is it that I want to do? What do I hope to get out of it? What things do I want to do? Which experiences do I want to do? What do I hope to gain, et cetera. And then you enter into the experience and there's so much coming at you that we built some reflective prompts for that during time so that it capture it in the moment. What am I doing? Why am I doing this? How do I make meaning of this?

(08:04):

How do I go back each day and ask the right questions and engage in the right kinds of thoughts to make the most of this experience? And then we have the post. The learning from doing the experience should not end when the experience ends. The learning and the development and the growth that comes from study abroad should not end when you get off the plane in New York and go home to your family. You've just had this amazing experience. There are so many things that still should be resonating with you. You still should be chewing on thinking about what's next for me in this learning? I really like learning about this. How do I continue learning about this? Well, the same thing's true with undergraduate research. You're learning from an undergraduate research experience should not end when you make a presentation at surf. When you make a presentation at a professional meeting, you shouldn't say, alright, well that's done now.

(08:52):

I never have to think about that again. It should. Well, that was just another experience in a very long learning trajectory, but it's easy to move past it. It's easy to say, alright, well that was a kind of culminating touch point and now I'm done with that. Well, what we're hoping with some of those post questions is to prompt, you may not do the exact same thing again. You might say, I'm never going to do another formal research project. I hope not, but maybe. But what are the things you learned in that? What are the things you learned about inquiry? What are the things you learned about asking the right questions about seeking information so that you're making informed decisions in your life and then contributing to the body of knowledge so other people can learn from that? That's hugely important. It's about being part of an intellectual community, a community of smart people. It hangs it up short if we don't learn from one another. And so some of these mentoring prompts is really about how do I now position my new awareness in my ongoing learning life?

Jessie L. Moore (09:56):

And for our listeners who are less familiar with the Elon experiences, I'll interject very briefly and say that they include community-based learning or service learning, global engagement, internships, leadership and undergraduate research. And of course, Elon is offering all five to students. Most students do two or more. Other institutions might only offer one or two of those. But the original fire toolkit that has questions related to each of those Elon experiences is available for free on the center's website. We'll link to that in the show notes so that even if your school is only doing undergraduate

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research, there's questions there for you. If you're doing internships, there are questions there are for you. And then we now also have kind of an expanded pack that is looking across your educational journey to offer some additional pre, during and post reflection questions to guide some of that integration of how are we making meaning of these experiences?

Paul Miller (11:02):

Yeah. Yeah, I think that's a great point. It's that new section about student identified learning experiences. I think that some of the benefit of, for example, for undergraduate research, if your institution is invested in undergraduate research, which I totally support, but what is the most meaningful learning experience that a student has when they're enrolled at your institution? It's so unique. So there's potentially as many answers as there are students. And so I think beyond the formal things that they engage with, and I hope they do do undergraduate research, I know that it's hugely developmental and it has some scaffolding around it. And so some inherent structures that I do think do support deep learning in a really effective way. I think also then integrating those kind of student identified learning experiences is hugely important. How do those things connect? Because it might be an off-campus employment thing that they're doing.

(11:55):

It may be an on-campus employment opportunity that they're doing. It could be a sport that they're a member of a teammate, a team member of a varsity sport, and their relationship with their coach has been hugely developmental. You just don't know where it is. Maybe their dynamic with their roommate, you just don't know. So the opportunity for it to be very unique to the student tailor made, and then thinking about that, how does that connect with their undergraduate research experience, an awareness that these things aren't done in a vacuum, that they are done as a part of a community that informs the community. And there's people that bring all different kinds of experiential and knowledge based knowledge to the table to have those discussions. If you don't practice it, you never get it. And so having this prompted reflection, I'm an exercise scientist, so to me it's like this is the training. You're not going to be proficient. You're not going to build the muscle if you don't train the muscle. And so the more we ask students to do meaningful reflection and revisit those reflections and think about how they've grown from that, deepens their understanding of that, if you don't actually prompt it, it may or may not happen, but it certainly won't happen to the depth that the students who do engage in it on a regular basis happens.

Nolan Schultheis (13:14):

It was funny when you had mentioned the whole study abroad thing. I had studied abroad. I went to Brazil this past winter J term, and you had said something, you just briefly mentioned it. And all these memories had came flooding back into my head, like the people I met, the connections I made with the locals, just the time I had meeting new people and creating new friends amongst the class itself. And then later on in the conversation, you brought up that exact thing I had done. And so I think that honestly gives a lot of testament to the structure. Elon has applied in terms of the fire toolkit and the, what is it, engaged learning practices. It definitely works. And you had said what would be the most meaningful thing? And I would definitely say as of now, only a sophomore, but as of now, that study abroad trip was definitely one of the most meaningful things. I truthfully did look at it in the way you were saying, what are you going into intention wise on that trip? I'm a big fan of meeting new people and creating connections, especially learning about other cultures or other ways of life. So that was really awesome for me. And obviously Elon is doing a great job of keeping that going.

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Paul Miller (14:31):

Well, that's great. So what I would say to you, Nolan, is so what was it that you liked best about that experience and what would you like to know more about that content area? So there may be an undergraduate research experience for you relative to what you learned on your study abroad. These things don't have hard borders around them, and that's what people need to realize is that they're all pieces of a really amazing mosaic. So your learning is creating a unique mosaic of your experiences. So what do you want to add to that? There's nothing, there's no edge of any tile that doesn't connect with another edge of a different tile. And so to me, I would challenge you to say, all right, what more do you want to learn about? And can you do that through a research experience?

Jessie L. Moore (15:17):

And it's interesting, undergraduate research is one of the things that has lower participation nationally. And yet I hope that the fire toolkit questions, particularly the across experience, pre-questions might prompt students to think about, okay, maybe there is an opportunity for me here. And I know Nolan and I have talked about this a little bit, that he doesn't necessarily see himself pursuing undergraduate research, but I kind of wouldn't be surprised if a year or a year and a half you suddenly realize, wait, there's a question here that I'm curious about and I want to learn more about.

Paul Miller (15:55):

Not only is it, I think just really great way to take agency over your own learning and with something that somebody with a question that nobody's answered, right? Relative to an area you're interested in. There are these moments when you're doing research where, and it may be fleeting, but there are these moments where you learn something, you do your study and you make some kind of revelation in your head. And for that moment, you're the only one in the world that knows that. That's pretty cool. But the real cool part is when you get to go and share it with other people, when you get to kind of discuss that thing that you uncovered with somebody else and it lights a light bulb in their mind, and now they have a question that they're going to pursue, and at some point down the road in this little moment, they're going to uncover something nobody else knows, and they're going to have this moment of like, ah, I have something to share with the world. That's pretty awesome.

(16:52):

And I really do believe this. I think, and this is part of it, part of why we need to work with students in undergraduate research and through using tools like the Mentor, the Fire Toolkit is coming to a realization that there are very few strike oil strike gold moments in research that most of the time the way our understanding about some phenomenon is informed by an untold numbers of discoveries and discoveries that led to those discoveries and discoveries that led to those discoveries. It's all about all of us contributing to this really complex ecosystem of knowing. And that's part of it. And then the other part is understanding what does it mean, and without taking time to reflect and share that reflection and talk about it with people, making that meaning, finding that place where it makes sense in the grand of things is very difficult. It's difficult when you do the reflection, but it's more meaningful and you're helping other people understand it better too.

Nolan Schultheis (17:57):

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You touched on certain things in conversation about how the fire toolkit encourages reflection, but are there any specific parts of it that really encourage reflection throughout the undergraduate research process in particular?

Paul Miller (18:13):

I think it all does. I mean, that was kind of a central tenet of the whole thing was prompting reflection and learning. I think starting with a set of questions that have been kind of predetermined allows for a natural outflowing, the developmental kind of progression, because likely the follow-up question is not going to be scripted. The written questions get you get out of the starting blocks and then it's up to that dynamic. So it's about engaging people with that reflection. I think that that's foundationally how it works, how it was intended to work, I should say. So I don't know if there's any one striking feature other than that was a kind of guiding principle. I think the other guiding principle was that it would be introduced, probably introduced by a faculty member or staff member to a student, but then it has to transition to the students driving what gets delved into next.

Jessie L. Moore (19:19):

What are some of the contexts in which you've seen the fire toolkit questions on undergraduate research successfully used with students? Where have some of those introductions occurred? Or by extension, where might other colleges and universities try integrating the toolkit's, undergraduate research questions into their own activities?

Paul Miller (19:41):

So I think there's a couple of, at least at Elon, and I suspect there's probably similar structures at other institutions. I think some of the key touch points for that are in, well, one is our programs orientation type programs that welcome students to campus. So very early introduction to the pre-questions is part of the onboarding process for new students and new faculty and new staff. So as we onboard community members, making sure there's an awareness of this. So I think that's one touch point. I think another touch point is in the mentors themselves, when you're engaging with students around this to utilize this to help students deepen their learning, I think through advising systems, especially institutions that really embrace a formal advising system, I think that's an important place. And then I think in the undergraduate research program itself, and we've seen a great deal of success because our undergraduate research program has used the fire toolkit along within the summer undergraduate research experience to foster conversation, reflection and conversation across lunch tables, for example, that are really meaningful.

(20:53):

And I've heard, and it's anecdotal, but that's all right, it's not completely anecdotal. We've kind of found this too, is that the more we've engaged with that, students start to engage each other with it. So it's like, oh, that was an interesting conversation at lunch today. And then they continue the conversation student to student, which is another hugely important piece of supporting an intellectual community is the ability for students, multiple students, student one-on-one or in a group to talk about these things, right? Learning is cool. I think learning is cool. And so we have people doing a variety of things. So how do you learn about what's happening in other disciplines that are really, really truly interesting? And I think there's a lot. There's a depth of fluency. It's one thing to talk about that disciplinary talking, talk about a research project with a disciplinary colleague has one kind of set of characteristics, but being

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able to talk competently about a disciplinary research project with somebody who's outside of your discipline and really help them understand what you're doing, that's a whole nother layer of skill because then you need a real depth of understanding.

(22:07):

Well, you don't just get there magically. It has to be something you think about. It has to be something you work out with people who you know, somebody you have practice, something you really think about a lot and revisit and revisit and revisit. I think one of the things with the fire toolkit and this revisiting these things like where am I now and where am I in a year from now and two years from now, is the ability to go back and say like, huh, this is what I thought about undergraduate research when I was a first year student. Now I'm a third year student and I've done undergraduate research for a couple of years, and I see that answer a little bit in how I feel about it, but now this is really how I feel about it. So in some ways, those very early answers just the spark of the fire. It's the spark, but the fires going to really kind of come up a little bit later. But it's good to revisit those things. Then you can also say, well, this is where I was and this is where I am.

Nolan Schultheis (23:07):

So you mentioned specifically within the context of undergraduate research, the idea of mentors being an especially important role. I know the example you had just previously given with the whole working out thing, but in relation to this mentorship question, one of our recent guests we had on the podcast stressed the idea of relationship with mentors, and I was kind of curious, how does the fire toolkit enhance those faculty student relationships?

Paul Miller (23:34):

I think there's times that it adds focus. So mentoring is not just a warm cup of coffee and a scone. And so what it does is if you really embrace it, it puts some focus on it. What are we really trying to do here? Right? Yeah, it's good to develop nice relationships. I'm all for nice people interacting, believe me, in so many different contexts. But when you're embarking on an undergraduate research journey, you're actually, it's a learning experience. What are you trying to achieve? What kind of growth are you hoping that students can achieve through this? And so what this does, I think it ensures that while you can do all the other stuff, there is this through line of student development. There is this, this is really what we're trying to get done here and what we find out in our study, we'll find out.

(24:26):

That's the thing, right? We're going to find out through our study what we're going to find out. Sometimes at the front end, you have a hypothesis of what you're going to see, but you don't really know. You have a pretty educated assumption, but it may not go that way. Well, only time will tell. But the other piece, regardless of what you find, you can definitely focus learning experiences, right? Because what students can learn about themselves and about the research process and about information and about their own abilities to overcome hardship, to stay in something about their grit, about their resiliency, about their ability to connect disparate pieces of information is really important. And those are transferable skills. So when somebody does undergraduate research, they're developing all these transferable skills that will help them regardless of their career path, regardless of which community they end up living in, down the road, whatever they choose to pursue, it'll just make them more functional and more attuned to what's happening around them.

(25:31):

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If they do this right and they engage with the toolkit, they will learn how to communicate. Will they be the best communicator in the world? Maybe, but maybe not. But will they be better on day X than they were on day one? You bet. Will they be better at knowing where to find information? You bet. Will they be better about understanding how to seek answers to a problem? You bet. Will they be better about working in a team and being part of a community? Yeah, you bet. While those things may not have anything directly specific to the findings of their study, those are really important learning outcomes and that needs to have attention placed on it, and that's what the fire toolkit can do is shine a spotlight on those things and make sure that we as mentors and students are attentive to that.

Jessie L. Moore (26:21):

I really appreciate, Paul, the way that you're drawing out a couple things there. I think that the toolkit is helpful for starting to facilitate those deeper mentoring relationships. Sometimes when we're starting off projects, we're still learning about each other as students, as mentors. So having a chance to really have questions to prompt conversation and then give students agency to carry that reflection forward in ways that are meaningful to them. But then cycling back around to the point that you just ended on of helping the reflect on what are the transferable skills that I've learned and taken away from this experience that I can now use as I'm moving into my career path or future graduate studies or any of those things.

Nolan Schultheis (27:14):

So I know you've given certain anecdotes about how students should react with the fire toolkit, but if there's one thing you could say, what is the advice you would give about undergraduate research in relation to students who are listening to the podcast?

Paul Miller (27:34):

Invest in yourself. Alright, invest. Invest in your growth. See this as an opportunity to make big learning gains, right? Don't hold back on the questions. Ask your mentor questions. You're not just the question. You can also be a question asker. It's part of being in a relationship and mentoring is a relationship, right? It's a learning relationship, and it'll take on different characteristics as time goes on. So my advice would be this is an investment in yourself. Invest in yourself. Be confident in your ability to do this, but not so confident that you can't take direction. Be confident without being overconfident. Be confident that you can learn this. It's not about confident. I'm confident I can do this. I'm confident that I can learn this. I've been in the research game for a long time. I started doing research as an undergraduate student in the 1980s, so a long time ago, and I feel like every time I embark, and it's a through line for my career, I've never had a timeout on doing research since I started doing research in 1986. Okay. I still feel like I'm learning about myself. I still feel like I'm learning about my discipline. There's things that come down that I don't anticipate, but I learn how to deal with it. I learn how to overcome it. I learn how to integrate it. I know that I'm just partway through my journey and embrace that. It's exciting.

(29:18):

Don't seek an end. Just seek the next step.

Nolan Schultheis (29:22):

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Just the last thing you had said, this idea, this philosophy popped into my head, and that's that everyone's living for the first time. So I definitely agree with that. There's a lot to still learn even at whatever age we're at.

Paul Miller (29:38):
Absolutely.

Jessie L. Moore (29:40):
I also appreciate all the thought that you've given to this, Paul, and all the ways that you've generously contributed not only to undergraduate research and higher education, but to our more recent efforts at facilitating integration and reflection on these types of experiences. So thank you very much for joining us for conversation today. Today we will link to the fire toolkit from the episode notes, but we really appreciate you taking time with us.

Paul Miller (30:06):
Thanks so much. I really enjoyed it. Thanks. Anytime. Let's do it again.

Jessie L. Moore (30:19):
So Nolan, what stood out to you that you think students should think about from this episode?

Nolan Schultheis (30:25):
I thought it was really interesting, the point that was brought up about mostly the fact that all of these ideas and contentions that the FIRE Toolkit will bring out of us are sitting within ourselves, but we as people rarely take the time to reflect. And I think that with the FIRE Toolkit, it's a cool interaction that all it takes is really reading a question that might prompt the gears to start turning and then that could turn into a multitude of things. It could change how you behave, it could change what you want to study. I just think the idea of reflection in general, needing to be more prevalent in everyone's lives is interesting.

Jessie L. Moore (31:10):
I agree. And it was interesting to me, even though Paul and I collaborate a lot, we've designed this Toolkit that has pre-experience questions, during experience questions, and post experience questions, and Paul just kind of blew that up a little bit by reminding us that the journey doesn't end when we finish with the post. And so it really is an opportunity to think more iteratively, more cyclically that recognizing that just because we're coming to the conclusion of one type of experience doesn't mean that we can't still think about its implications for what's next in our life, what's next in our journey, and the other types of experiences that might prompt us to consider. I also really appreciated his reminder that the FIRE toolkit can help us think about transferable skills that as students you can take forward to graduate study to the workplace from undergraduate research or the other experiences that you might be reflecting on. Once again, I'm Jessie Moore.

Nolan Schultheis (32:22):
And I'm Nolan Schultheis. Thank you for joining us for Making College Worth It from Elon University Center for Engaged Learning.

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Jessie L. Moore (32:29):

To learn more about undergraduate research in higher education, see our show notes and other resources at www.centerForEngagedLearning.org. Subscribe to our show wherever you listen to podcasts for more strategies on making college worth it.