

Chris Kapulkin (Western University)

Jacqueline Doan is a person whose energy knows no bounds. During her M.Sc. (2021-23) at Western University, she published four papers and delivered presentations at international conferences. On top of her academic achievements, she also founded and served as the first president of Western's student chapter of the Association for Women in Mathematics (AWM). There are currently over 100 student chapters at universities across North America that help address the existing imbalances and promote success of female mathematicians. Chapters' activities range widely and include networking events, lecture series, outreach activities, and mentoring opportunities among others. While the chapters operate independently of one another, each year the AWM recognizes the most active ones with awards in different categories, like community outreach or scientific excellence.

Jackie was spectacular at running the chapter. Constantly coming up with new creative events, she and the chapter were recognized with an AWM award for outreach among all chapters in 2023. I met with Jackie to speak about her experience founding and running the chapter in hopes that her story inspires some to start new chapters across Canada and others to get involved in their activities. We discussed her reasons for founding the chapter, including her experience as often the only woman in the room, and how the chapter brought positive change for her and other women. We also talked about the chapter's various activities and lessons learned from three years' worth of events, outreach, and community-building.



Chris Kapulkin: Let me start with a somewhat provocative question. Math departments around the world are doing their best to attract female applicants at all levels: from undergraduates to faculty members. Given all these efforts, do we really need student chapters of the AWM?

Jacqueline Doan: When thinking about improving female representation in mathematics and other fields, we need to consider two aspects: recruitment and retainment. I agree that universities are putting a lot of effort into recruitment, but retainment is still lagging. This is why as we are moving to upper levels, from undergraduate to graduate, or from postdoc to assistant professor, we see fewer women. To address this issue, we need to think about the environment women experience when they arrive at our institutions, and frankly, my experience could have been better.

CK: Can you help me understand why?

JD: Mathematics is still a male dominated field. As an undergraduate, when talking to other math students, I felt that my opinion wasn't taken seriously. It happened numerous times that when working on a homework problem together, I would make a suggestion that would be dismissed by my male-only peers. When a few minutes later, another person, this time a man, repeated this exact suggestion, it would be acknowledged as a great insight. You might say "what's the big deal?" but when situations like that happen all the time, it's hard not to let them get to you. You start doubting yourself and question whether you belong in this community.

Being the only woman in the room, I got unsolicited comments about my appearance as an almost daily occurrence. It would be easier to stand up for myself if there was another woman in the room with me. But being alone, I felt I had to go along to get along.

CK: This is all deeply disturbing to hear. Can you speak to ways in which the student chapter helped you and other women?

JD: I started the chapter as a "support group" for women. All of us there could relate in some way to the experiences mentioned before of not being taken seriously, belittled, and objectified. I felt I had people that understood me and how I felt. Until then, I didn't realize how much I needed it.

In the early days of the chapter, we focused on small networking events and workshops that helped us build a tight community. Through this process, I also realized that I had built a lot of internalized misogyny. Being exposed to the culture I was surrounded by, I bought into the expectation of what a mathematician should look like and behave. I subconsciously thought I was "cooler" than other girls because I was hanging out with boys. I recognize now that it was just a coping mechanism. I had to buy into this culture or be completely isolated. The chapter allowed me to break out of this mindset.

I am excited to see how many first and second year students now belong to the chapter. I hope that as a result, other women will have a better experience during their degrees.

CK: Given the success that you have had, students at other universities may wish to start their own AWM student chapter. What advice would you give prospective founders and/or chapter presidents?

JD: I believe in engaging your community in every way possible. I thought of what we can offer those on campus and those in our local community, in London, Ontario. We focused heavily on outreach, going to local high schools, telling students about mathematics as a profession and opportunities for women in mathematics. Many students that are about to graduate high school are unaware of the fact that mathematics is something one can do in life and what career options there are for those with a mathematics degree.

You should also try to leverage your personal network. Our high school visits started with going to my own high school. Because of a contest I participated in before, I had some contacts at a math software company. I casually asked them for funding for an event we were organizing as a chapter and they agreed!

One thing that was difficult for me in the beginning was to start depending on other people. I'm a perfectionist and would like to do everything myself. But to build a community, you need to get others involved. By letting go, you are allowing others to get engaged and feel included in the community you are building. And perhaps even more importantly, once we were a team, we could organize events at a scale that I could not imagine being just one person.

I also appreciate the direction the next presidents took the chapter in. Although I'm no longer at Western, I still hear about the events and am constantly impressed with their creativity and scale.

CK: Speaking of events, which of the events that you have organized stick best in your mind?

JD: As I said, early on, we focused on smaller networking events and I think fondly of their intimate atmosphere. One that stood out was "Professional Headshots" – I have a side interest in photography, so I brought my camera and offered to take everyone's headshot. Very simple but people appreciated it. And it helped us reach new people on campus: students posted their pictures online and were asked where they got professional pictures from. We had several people asking to join the club that gets you professional headshots for free. Of the more recent ones, I really like the idea of "math duels" where members just gathered to solve some math puzzles together and win prizes. It's very simple but it really helps build a community.

I also enjoyed going off campus and visiting local high schools. Going to my own high school was an opportunity to reflect on how far I have come since then. And going to my successor's high school in Stratford allowed me to understand her much better than I did. Not to mention, our car broke down on the way, and dealing with it was perhaps a better bonding experience than I could ever intentionally arrange.



CK: While this

feels like a long list, it is just a small part of everything the chapter has done. For those who want to see more, there is a link to the chapter's website at the end of this article. But let's talk about the other side of this picture – what could faculty administrators do to support a student chapter?

JD: When it comes to supporting the student chapter, I feel that less is more. That's something I appreciated at Western: our faculty sponsors arranged funding for our events and left us alone, giving us an opportunity to learn and grow. Not all of our ideas were good, and some events did not work out the way we wanted, but we were able to learn these lessons and improve going forward. And, of course, the fact that we had continued financial support was very helpful in reaching students who might have heard about a club with free food.

Thinking more broadly, I would say that all of us should think about how to make our language less exclusive. Forming inner circles and groups with special privileges tends to promote more confident individuals who can force their way into them. Unfortunately, the atmosphere of exclusivity may persist and makes it harder to establish communication channels between students and faculty. As a

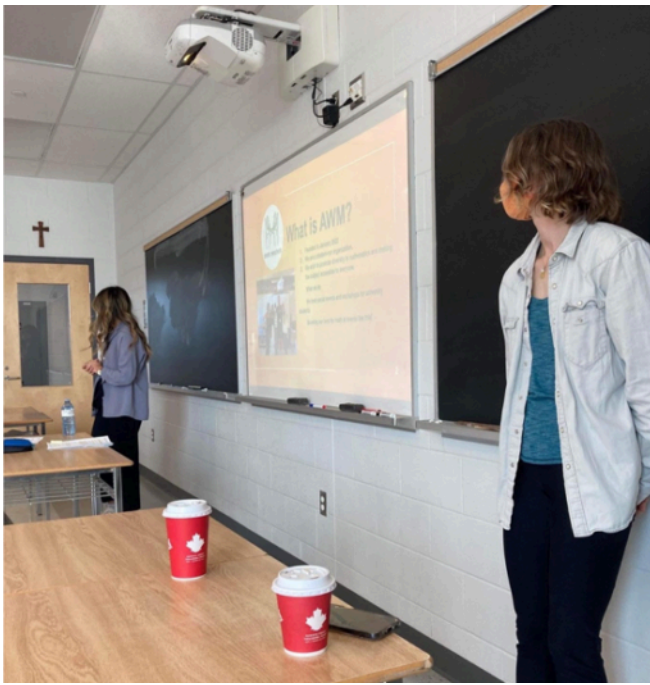
result, those mistreated by others are less likely to bring it to anyone's attention, choosing to suffer quietly instead. For that reason, the AWM events are always open to all.

CK: And last but not least, what would be your advice for undergraduate students coming from underrepresented groups?

JD: For those doubting whether mathematics is for them, I would say "you actually like math; keep doing it." Sometimes, all that's needed is a supportive community. Coming from an underrepresented group, you might find it harder to find such a community, so think out of the box and don't be afraid to meet new people.

Be open minded about your interests. Being surrounded by (over)confident people, you might get an impression that you need to know at 18 or 19 exactly what you want to do. You don't! Your interests may evolve and there is no reason to limit yourself. Take a wide range of courses and seek diverse opportunities, like an internship. Your degree will be what you'll make it to be.

I also think there is some role for the AWM chapter to play here. Students from underrepresented groups are less likely to hear about different opportunities, like an NSERC scholarship, through more traditional channels. I wish I was told to talk to my professors and develop my interests much earlier than I was. And for students from underrepresented groups who might not know the ins and outs of academia, this is far from obvious! Both of my parents are immigrants working minimum wage jobs. What others took for granted, I learned quite late in life. I believe the AWM has both the reach and the sensitivity that allows it to minimize many of these inequities.



Western student chapter's website: <https://sites.google.com/view/awmwestern> Learn how to start your own chapter: <https://awm-math.org/programs/student-chapters-info/>

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