

Transforming Teachers into Teacher Leaders of Mathematics

https://digitalcommons.imsa.edu/pfs_pr/47/

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Objective: Attendees will 1) discuss what it means to be a teacher leader of mathematics, within and beyond the classroom, 2) discover steps that teachers can take to begin being recognized as teacher leaders of mathematics, and 3) determine actions that education leaders can take to promote the development of teacher leaders of mathematics. The presenter will share examples from her own journey in becoming a teacher leader of mathematics and will provide teachers and education leaders with recommendations and resources for transforming teachers into teacher leaders of mathematics across all levels.

What is a teacher leader?

- Lead within and beyond the classroom
- Influence others toward improved educational practice
- Identify with and contribute to a community of teacher leaders
 - Katzenmeyer and Moller (1996) from <https://files.eric.ed.gov/fulltext/EJ1103358.pdf>

What can teachers do to begin being recognized as Teacher Leaders of Mathematics? (TLM)

How can Education Leaders Transform Teachers into teacher leaders of mathematics? (ELT²)

1. TLM: Join and Become Involved in at least 1 Professional Organization for Math Teachers

ELT²: Encourage Membership to Professional Math Teacher Organizations

- *ICTM: Illinois Council of Teachers of Mathematics - <https://www.ictm.org/>
 - *Examples of how to get involved - <https://www.ictm.org/volunteer-with-ictm>
- NCTM: National Council of Teachers of Mathematics - <https://www.nctm.org/>
- BBA: Benjamin Baneker Association (Black student focus) - <http://bbamath.org/>
- TODOS: Mathematics for All (Latinx student focus) - <https://www.todos-math.org/>

2. TLM: Continue to learn and grow by attending conferences/webinars/workshops and/or participating in cohorts or credentialing programs, then reflect/try/apply

ELT²: Support teacher attendance at conferences/webinars/workshops/online PD or cohorts/micro-credentialing programs (info, time, & budget for fees and stipend)

- Check the websites of the listed organizations for dates of upcoming conferences (fee based)
- Check organizations and/or read emails for info regarding FREE webinars
 - Example - <https://www.ictm.org/ictm-webinars>
- Consider online PD – <https://www.imsa.edu/centers/educator-development/available-courses/>
- Take advantages of opportunities for cohorts, micro-credentialing, or National Certification
 - Nepantla Cohort for Social Justice - <https://www.nepantlateachers.org/nepantla-cohorts>
 - Illinois Math & Science Academy - <https://www.imsa.edu/centers/educator-development/educator-microcredential/>
 - National Board of Professional Teaching Standards - www.nbpts.org or <https://www.isbe.net/Pages/National-Board-Certified-Teachers.aspx>

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3. **TLM: Lead/present/share within the department/school and/or at a conference, webinar, podcast, website, You-Tube, Twitter, etc.**

- Investigate calls for proposals from organizations/conferences and submit a proposal (Title, Description, Level, Strand Focus?) to present at a conference
- Create a PUBLIC class website and/or professional blog/website
 - Ex. Reggie Duncan – PAEMST - <https://sites.google.com/msd19.org/reggieduncan/duncans-home> or use www.wix.com
- Share & follow via a professional Twitter & LinkedIn account
 - Ex. Jennifer Dao – 8th Grade NBCT & 5-8 ICTM Director - <https://twitter.com/JDaomath>
 - Ex. Howie Hua – Education Professor & Tic Toc Video Explainer - https://twitter.com/howie_hua
- Lead a podcast - https://blog.feedspot.com/math_podcasts/

ELT²: Provide teachers & encourage Ts to lead within the school/district and greater community & encourage teachers to present or co-present at conferences/webinars

- Visit classrooms to discover the strengths of teachers
- Plan time w/in meetings & professional development for Ts to share/lead on specific topics or areas of expertise
- Provide (or advocate for) a website that readily identifies “math teachers” w/ links to teacher contact/webpages
- Offer training to Ts on creating a class/teacher webpage
- Encourage Ts to present/co-present at webinars or conferences

4. **TLM: Observe classrooms across all levels, mentor new teachers, teach a methods course at a local university, and/or partner with teachers regarding instructional strategies or curriculum/project development & implementation.**

ELT²: Develop a mentoring program or initiate an instructional partnering program or curriculum team that is assisted by a supportive schedule (flexible time, common planning, or release time)

5. **TLM: Recognize the efforts of students; invite administrators, colleagues, and community members to your classroom; & provide opportunities for students to showcase their learning to the greater community.**

ELT²: Publicly recognize (via social media, etc.) the work being done by teacher leaders by name, nominate teacher leaders for various awards (ex www.ictm.org/ictm-awards), and/or encourage teacher leaders to apply for various awards (ex. <https://tinyurl.com/Innovation-Showcase-2022>)

- Recognize & showcase images of student learning through the school’s social media platform
- Invite professionals from the community to talk about their career & math connections
- Provide/support opportunities for students to showcase their learning outside of the classroom
- Send positive emails/texts (<https://www.bloomz.com/teachers>) regarding student learning w/ **pics**

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6. **TLM: Connect, Collaborate, and Learn from Professionals Outside of “Mathematics”**

ELT²: Permit time, stipend, and/or CPDUs for teachers to explore/connect a STEM career field

- Engage in “non-math” events or workshops
 - *Materials Camp 4 Teachers - <https://www.asmfoundation.org/teachers/materials-camps/year-one/>
 - Math & Machining Workshop - https://twitter.com/IMSA_/status/1143866754181062656
 - Ranken STEM Camp for Educators - <https://ranken.edu/programs/summer-stem-academies-for-educators/>
 - Manufacturing Day – <https://creatorswanted.org/mfgday/>
 - Career Expo – Talk to your CTE Director (https://www.isbe.net/Documents/efe_directory.pdf)
- Shadow Professionals in STEM or take a “non-math” class at a community college
 - Crash Reconstructionist
 - Go to <https://actar.org/directory> & search w/in your state to find a local reconstructionist
 - Contact Kelly for an ILLINOIS STATE POLICE RECONSTRUCTIONIST
 - Contractor/Construction Worker/Carpenter/Developer
 - R3 Development - <https://twitter.com/teachers4steam/status/1387748725532004354>
 - Habitat for Humanity - <https://www.habitat.org/volunteer/near-you/find-your-local-habitat>
 - Surveyor – community college class or PD experience
 - Ex – ENGR 251 @ Southwestern Illinois College - <https://www.swic.edu/academics/transfer-degrees/engineering/curriculum/>
 - Ex – Parkland College – <https://www.parkland.edu/Main/Academics/Departments/Agriculture-Engineering-Science-Technologies/Areas-of-Study/Land-Surveying>
- Join non-math organizations
 - AIAA - www.aiaa.org/membership/types-of-membership/educator-membership
 - Civil Air Patrol - www.gocivilairpatrol.com/programs/aerospace-education/for-educators
- Observe, discuss curricular connections, and interact with teachers from other subjects
- Integrate/promote career connections & opportunities - https://digitalcommons.imsa.edu/pfs_pr/39/
- Develop collaborative projects/activities that connect other disciplines & community resources
 - Remijan, K. W. (2017). *Project-Based Learning ... to Motivate Secondary Mathematics Students*. **Interdisciplinary Journal of Problem-Based Learning**, 11(1). <http://docs.lib.purdue.edu/ijpbl/vol11/iss1/1/>
 - Remijan, K.W. (November 22, 2017). *Building Mathematical Skills and Community Relationships Through Crash Reconstruction*. **ASCD Express**. <http://www.ascd.org/ascd-express/vol13/1306-remijan.aspx>
 - Remijan, K.W. (September 2018). *Cultivating the Machining Field by Planting Seeds in the Math Classroom*. **The Record**. 24-27. Retrieved from <https://ntma.org/wp-content/uploads/2019/02/Sept18-Record-web-compressed.pdf>

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7. **TLM: Seek out and apply for grants or participate in a funded grant or fellowship opportunity**

ELT²: Share opportunities for teachers to apply for a grant or participate in a funded grant or fellowship

Examples of National or International Grants or Fellowships for Teachers

- <https://www.nctm.org/grants/> (*Received the Toyota TIME Grant for Project MELTT)
- <https://www.iae.org/Programs> (*Received the Fulbright Memorial Fund Fellowship to Japan)
- <https://www.toshiba.com/taf/about.jsp>
- <http://stemgrants.com/stem-grants-for-k-12-nonprofits/>
- <http://www.agintheclassroom.org/TeacherResources/Grants.html>

Examples of State or Local Grants

- Illinois Innovation Talent Pilot Grant (*Received grant for Project DESTINE.)
 - Grant previously offered by ISBE & <https://www2.illinois.gov/dceo/Pages/default.aspx>
- School Endowment (*Fire RESCUE & St. Louis Architecture: Downtown to Midtown)
 - Example/Resource for Creating a School Endowment <https://www.othsendowmentfund.us/>
- Scott AFB (*Received grants for STEM Career to Classroom Initiatives)
 - Special thanks to the Scott AFB & Dr. Cindy Doil, School Liaison Officer

Opportunities for Teachers Funded by Grants

- IMSA – www.IMSA.edu/Educator
 - *Innovation Showcase (PreK-12th Grade) - <https://tinyurl.com/Innovation-Showcase-2022>
 - Little STEAMers (PreK Teachers) – Originally funded by Boeing
 - Math at Work: Career Challenge (Middle School Teachers) – Originally funded by ISBE
 - FUSION (Middle School Teachers) – Originally funded by the Illinois Bi-Centennial Grant
 - Illinois Future Highway (7th Grade Teachers) – Originally funded by the Illinois Tollway
- ROE - <https://www.isbe.net/Pages/Illinois-Mathematics-and-Science-Partnerships-Program.aspx>
 - Math & Science Partnership Grant for 150 k-12 teachers from 13 counties
 - Check your local ROE - https://iarss.org/wp-content/uploads/2020/10/IARSS-Directory_2020_2021_web-1.pdf
- Illinois Humanities Council- <https://www.ilhumanities.org/division/grants/>
 - I participated in “How Designers Have Shaped Our Environment” at Pere Marquette IL
- National Humanities - <https://www.neh.gov/grants/professional-development>
 - I participated in “The Art & Architecture of the U.S. Capitol” in Washington DC
- Others
 - Desmos Fellowship - <https://learn.desmos.com/fellowship>
 - Einstein Fellowship - <https://science.osti.gov/wdts/einstein>
 - Knowles - <https://knowlesteachers.org/teaching-fellowship/teaching-fellows-program>
 - Math for America - <https://www.mathforamerica.org/fellowships>

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8. **TLM: Read journals/newsletters & contribute an article/problem or act as a reviewer**

ELT²: Encourage teachers to share their ideas with the greater mathematics community by writing (or reviewing) an article

- Association of Supervision & Curriculum Development - ASCD (ASCD Express)
 - Write - <http://www1.ascd.org/ascd-express/themes/Write-for-ASCD-Express.aspx>
 - My example - <http://www1.ascd.org/ascd-express/vol13/1306-remijan.aspx>
 - My example - <https://www.ascd.org/el/articles/keeping-mid-career-teachers-with-hybrid-and-part-time-positions>
- Illinois Council of Teachers of Mathematics – ICTM (Illinois Mathematics Teacher Journal)
 - Write – <http://journal.ictm.org/index.php/imt/information/authors>
 - My example - <http://journal.ictm.org/index.php/imt/article/view/112>
- Benjamin Banneker Math Association – BBA (Lighthouse Almanac)
 - Write/Examples - <http://bbamath.org/index.php/lighthouse/>
 - My example (pdf page 13) - http://bbamath.org/wp-content/uploads/2021/03/Lighthouse-Almanac_Vol4_Issue1.pdf
- National Council of Teachers of Mathematics – NCTM (Learning and Teaching PK-12)
 - Review/Referee - <https://www.nctm.org/Publications/write-review-referee/Referee-a-Manuscript/>
 - Write - <https://www.nctm.org/Write-for-MTLT/>
 - *My example - <https://pubs.nctm.org/view/journals/mt/112/4/article-p250.xml>
- Interdisciplinary Journal of Problem-Based Learning
 - Submit – <https://scholarworks.iu.edu/journals/index.php/ijpbl/about/submissions>
 - My example – <https://docs.lib.purdue.edu/ijpbl/vol11/iss1/1/>
- National Tooling & Machining Association (The Record)
 - Submit – Email contact or person mentioned in publication – https://ntma.org/resources/the_record/
 - My example (pdf page13) - <https://ntma.org/wp-content/uploads/2019/02/Sept18-Record-web-compressed.pdf>
- Journals/Magazines no longer in publication w/ my examples
 - STEAMed Magazine – <https://viewer.joomag.com/steamed-magazine-october-2016/0560636001474562057?page=11>
 - American Education Journal - <https://www.jstor.org/stable/43694932>
- Other Journals that I have articles currently under review
 - Journal of Mathematics Education - <https://journals.library.columbia.edu/index.php/jmetc/about/submissions>
 - Teaching for Excellence and Equity in Mathematics – TEEM - <https://www.todos-math.org/newteemwb>
- Other Journals of Future Interest
 - Elementary STEM Journal - <https://www.iteea.org/39195.aspx>
 - ILASCD Quarterly Journal - <https://illinoisascd.org/resources/publications>
 - ATEC Journal - <https://www.atec-amt.org/the-journal.html>
 - The Mathematics Enthusiast - <https://scholarworks.umt.edu/tme/>

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9. TLM: Lead within and beyond the classroom

ELT²: Consider formal roles for teacher leaders supported by release time or part-time schedules.

- Examples of a Dual Roles for Teacher Leaders of Mathematics:
 - Instructional Partner
 - Technology Coach
 - RTI Coordinator
 - Career Tech Education (CTE) – Math Specialist
 - Department Chair
 - Grant Director
 - Data Analyst
 - Community Liaison
 - PD & Curriculum Coordinator
 - Curriculum Translator
 - Mentor
- Formal dual role positions can retain teachers
 - Provides teachers growth opportunities
 - 60% of all teachers who left the classroom voluntarily cited career advancement as the reason. (McFeely, 2018)
 - Source: <https://www.gallup.com/education/237275/why-best-teachers-leaving-ways-keep.aspx>
 - Utilizes the strengths of veteran teachers to help new teachers
 - 44% of teachers were found to leave within 5 years of entering the profession (Ingersoll et al., 2018)
 - Source: https://repository.upenn.edu/cgi/viewcontent.cgi?article=1109&context=cpre_researchreports
- Teacher leaders need time
 - Release time, training, & clarity of goals for a particular role is necessary (Will, 2019) & teacher leaders given these components are satisfied in their position (Remijan, 2016)
 - Sources:
 - <https://www.edweek.org/teaching-learning/how-can-states-and-districts-make-teacher-leadership-roles-more-effective/2019/06>
 - <https://www.ascd.org/el/articles/keeping-mid-career-teachers-with-hybrid-and-part-time-positions>
 - Part-time teaching can retain teachers
 - 41% of teachers who left the profession cited a desire to work part-time (Sutcher et al., 2016)
 - Source: https://learningpolicyinstitute.org/sites/default/files/product-files/A_Coming_Crisis_in_Teaching_REPORT.pdf
 - Part-time teaching provides balance between work/goals & life (Remijan, 2016)
 - Source: <https://www.ascd.org/el/articles/keeping-mid-career-teachers-with-hybrid-and-part-time-positions>
 - Flexibility in the profession can retain & attract teachers
 - 92% of younger workers either work flexibly or say that they want to (Timewise, 2017a).
 - Source: https://timewise.co.uk/wp-content/uploads/2019/06/Flexible_working_Talent_Imperative.pdf
 - As a result of the pandemic, flexibility is now the #1 priority for job seekers & some teachers (Rodberg, 2022)
 - Source: <https://www.edsurge.com/news/2022-01-10-teaching-must-get-more-flexible-before-it-falls-apart>