

Reimagining Externships: A Teacher-Led Model for Individualized Experiences

Maria Alonso Luaces¹, Maya Baughn¹, Zakry Akagi Bustin¹, Lindsay Jorgenson², Crystal Lumpkins³, LeAnne Richardson⁴, Karin Chang⁵, & Megha Ramaswamy¹

¹University of Kansas Medical Center, ²University of Kansas, ³University of Utah, ⁴Kansas City, Kansas Public Schools, ⁵University of Missouri - Kansas City,

malonsoluaces@kumc.edu; mbaughn2@kumc.edu; zakagibustin@kumc.edu; lelliott@ku.edu; u6044267@utah.edu; LeAnne.Richardson@kckps.org; k.chang@umkc.edu; mramaswamy@kumc.edu

Abstract

With the increase in student enrollment in Career and Technical Education (CTE) courses, the need for enhanced professional development and learning opportunities is in demand. CTE teachers leave the field of education at higher rates than their general education counterparts. As such, a driving factor of attrition is the lack of high-quality professional development opportunities. Additionally, curricular materials that are meaningful, relevant, and enhance student engagement and success, and connections to mentors and professional experts in the field impact CTE teacher retention. Teacher externships have tremendous potential as professional development tools to increase teacher retention and academic rigor in CTE classrooms. Implications of the Teachers and Students for Community-Oriented Research and Education (T-SCORE) externship model are relevant to CTE and core content design, development, and implementation of integrative curricula in urban high school settings. Study findings may also guide CTE teachers in seeking socially and culturally appropriate materials and opportunities where necessary for optimal learning and culturally relevant pedagogy.

Introduction

Participation in Career and Technical Education has increased substantially in recent years, as the evidence base for authenticity and connecting classroom learning with the real-world continues to grow (Asunda, 2014). With growing numbers of CTE participants, concerns regarding the reach and quality of CTE programs, as well as the recruitment and retention of high-quality CTE teachers have emerged (Estes & McCain, 2019). CTE teachers leave the profession at higher rates (16.1%) than the general population (10.3%) during their first year of teaching (Deever et al., 2020). Further, the lack of didactic materials and meaningful connections with mentors affects attrition (Deever et al., 2020). However, particularly crucial to increasing teacher retention is the opportunity to work in an innovative environment, having access to meaningful professional development, and quality industry partnerships (Deever et al., 2020; Gaikhorst et al., 2015; Geiger & Pivovarova, 2018).

The professional development needs of CTE teachers are complex and different from core teachers due to their unique responsibility to teach beyond the classroom (Conneely & Hyslop, 2018). Teacher externships have tremendous potential as professional development tools to increase teacher retention and academic rigor in the CTE classroom. Traditionally certified CTE teachers may lack industry experience, and even for those who have it, fields such as technology

or health care are changing faster than ever (Jacques & Potemski, 2014). Externships provide an opportunity for educators to expand their networks and to base the design and implementation of classroom experiences on relevant, up-to-date content as well as the most pressing issues in the industry (Akgunduz & Mesutoglu, 2021; Bowen & Shume, 2020). Most professional development for CTE teachers focuses on building industry knowledge but does not provide opportunities to develop industry-informed content aligned with curricular standards and classroom instruction (Ermeling & Yarbo, 2016; Kyees, 2014). Moreover, evidence regarding the effects of teacher externships on students' achievement and classroom instruction is still limited. A variety of models and structures continue to emerge for the design and implementation of teacher externships, such as programs developed by various state education agencies and non-profits (Alignment Nashville, 2019; Educate Texas at Community Foundation of Texas, 2016; Oklahoma CareerTech, 2023) with most programs being designed unidirectionally by the industry partners as summer experiences for CTE teachers (Bowen & Shume, 2020; Choi & Linton, 2020; Kantrov, 2014). Some of the most notable research-based externship experiences include the National Science Foundation's Scientific Work Experience Programs for Teachers (SWEPT), Research Experiences for Teachers (RET) (Bowen & Shume, 2018), and the Ignited program (Ignited, 2020).

This paper aims to contribute to this growing area of practice and research by describing the Teachers and Students for Community-Oriented Research and Education (T-SCORE) teacher externship, a teacher-led Individualized Educational Externship (IEE) for CTE teachers in the Health Science Pathway in a midwestern educational landscape. We also share preliminary data on the effects of the experience on teachers' classroom practices and instruction.

The T-SCORE Individualized Educational Externship (IEE)

The T-SCORE IEE program is part of a National Institutes of Health funded project at an Academic Medical Center. The goal of the project is to increase diversity in the healthcare field by improving opportunities for students and CTE teachers to form professional networks and increase the authenticity and rigor of the content delivered in the classroom. Local high schools are organized in CTE career clusters focusing on various industries, one of which is the Health Science Pathway. Within these learning communities, students can learn through the lens of a career in which they may be interested. As an Academic Medical Center, the focus was on collaborating with teachers in the Health Science Pathway who participated in T-SCORE and the local Health Science Academy, a unique collaboration between the school district, university, and health system.

To better understand the curricular and professional needs of CTE teachers in our region, we conducted an IRB-approved assessment of the curricular needs of CTE teachers. Originally, 30 teachers engaged in T-SCORE were contacted and 18 responded for a response rate of (60%). To increase responses, the survey was forwarded to CTE coordinators in the state rendering 10 additional responses for a total of 28 teacher responses. Of the 28 teachers, 27 teachers indicated (96% response rate) that they use online resources for curriculum development purposes. This is due to a lack of resources that are relevant and engaging to students, are aligned to CTE competencies, and/or provide real-world learning opportunities. Moreover, nearly half of

teachers (48%) in the sample reported their district did not provide a curriculum and identified a lack of sufficient and up-to-date book resources available for the students.

Based on the identified CTE teachers' curricular and professional development needs as well as the district's desire to partner with industry to improve both, T-SCORE started to offer Individualized Educational Experiences (IEE) for teachers in 2018. The goals of the IEEs are to provide teachers with an opportunity to meet with experts in the field, obtain feedback and increase rigor and authenticity, as it pertains to one specific unit in their curriculum.

Methods

Recruitment and Study Procedure

During the 2018-2019 and 2019-2020 school years, 13 educators participated in an IEE. These teachers were identified and recruited from the existing NIH SEPA project, T-SCORE, described above. T-SCORE staff submitted a call for participants to the partner school districts for teachers encouraging existing T-SCORE teachers to apply for an externship experience. Through this, snowball sampling was used to identify one additional teacher to attend the IEE with a T-SCORE participating teacher. All participants taught at the 9-12th grade level and the majority were identified through their district administration as CTE teachers through the T-SCORE grant or teaching within the local health science academy. Additionally, all selected participants were educators in three urban school districts in Kansas. As explained further in the results section, each teacher submitted a request (see Appendix), including the name of a possible partner for the experience and three possible dates.

The study team collected qualitative data by way of short informal interviews with the IEE participants as well as additional artifacts, such as agendas, notes, and summaries of the experiences. The interview questions focused on the impact of the IEE as a professional development model and its effect on student learning. Thematic analysis was used to code comments and establish themes from two open-ended survey questions. Transcripts were inductively coded by two team members to establish intercoder reliability and solve discrepancies. Codes were categorized into initial themes and grouped into coding categories that reflect the topic areas of the questions asked. A third member of the team independently reviewed the final codes and themes. All coders are familiar with T-SCORE and the IEEs making it easier to find sub-textual meaning within the transcripts.

Ethical Approval

All study procedures were approved by the University of Kansas Medical Center Institutional Review Board. All participants obtained written consent.

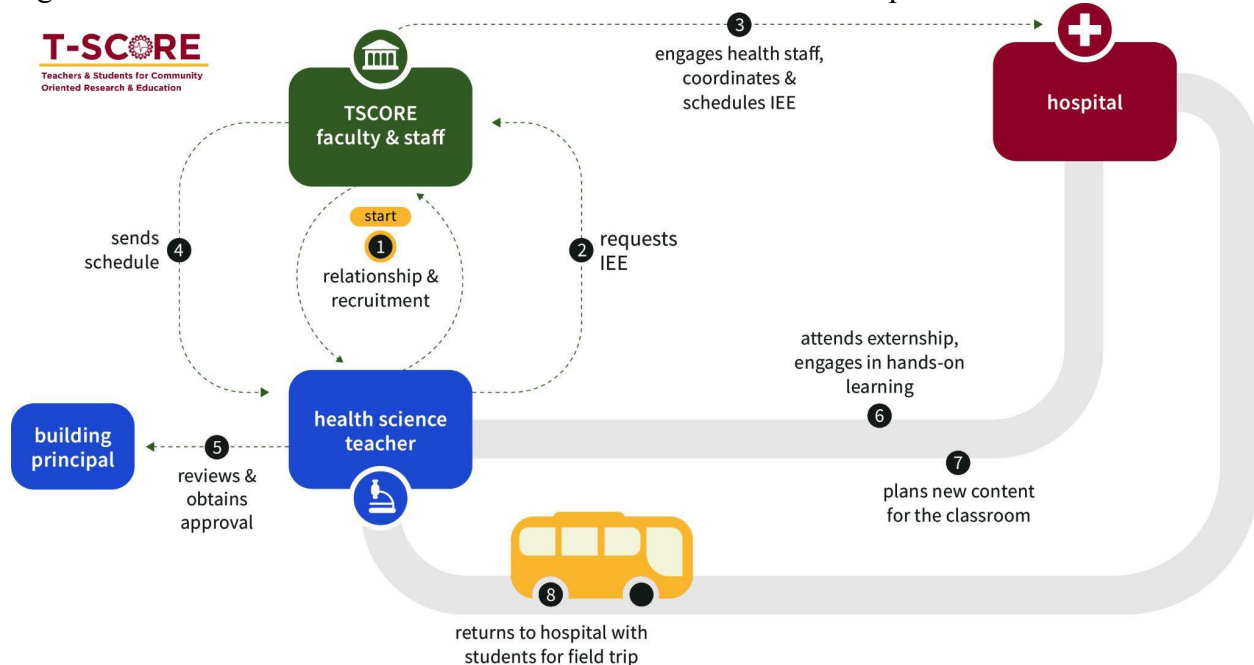
Results

Our model

Rather than creating pre-packaged externship experiences for teachers, we sought to understand CTE teachers' curricular needs and how we could help boost what was going on in their classroom; hence the term "individualized" to qualify the experience T-SCORE staff also wanted

to make sure that the opportunity was offered during the scheduled professional development time allocated for teachers by the district versus the summer when most teacher externships take place. Figure 1 depicts the model for developing T-SCORE Externships.

Figure 1. T-SCORE Model for Individualized Educational Externship



The planning phase of the externship was initiated by teachers who submitted a request to the T-SCORE team (See Appendix A). The request form provided a general outline of the externship and asked teachers to identify potential topics related to a specific unit as well as other potential collaborating teachers from the Health Science Academy who could benefit from the experience. The request also provided the next logistical steps needed for teachers to visit the Academic Medical Center during a district's professional development day (i.e. principal approval).

Once the request was received, the T-SCORE team gathered to start the **organizing phase**. The team, composed of k-12 educators, faculty and staff, brainstormed potential collaborators related to the topic requested and started reaching out. As outlined in the request form, at a minimum each IEE provided the following:

1. The T-SCORE team consulted with experts working in the field identified by the teacher. The focus was for teachers to share the targeted unit and receive feedback around authenticity and relevance, that is, the degree of transferability of students' activities and curricular content to real-world health science clinical and research work settings (Beier et al., 2019).
2. Teachers met professionals in different fields, found mentors, and expanded their professional network.
3. In consultation with experts, the T-SCORE team provided teachers with hands-on learning opportunities to increase their knowledge and understanding of the topic at hand.

4. In collaboration with faculty and staff, teachers designed an educational experience for students during the same unit (i.e. field trip, guest speaker, etc.)
 5. Teachers accessed information and contacts for potential future units.
- Once a draft of the schedule for the teacher IEE was crafted, the T-SCORE team requested feedback from the participating teacher and completed all the logistical aspects needed for the day to run successfully.

Finally, **the implementation phase** involved two visits to the Academic Medical Center: 1) An individually-tailored, one-day externship with health science professionals, researchers, and educators for the lead teacher(s) and a potential co-teacher(s) and 2) another experience for the whole class afterward on a different date but on the same unit/topic. Table 1 provides a sample of IEEs that took place during the 2018-2019 and 2019-2020 school years.

Table 1. Sample Individualized Educational Externships

Externship Domain	Teacher Externship Activities	On-Site Student Experience
<p>Content Area: Introduction to Health care</p> <p>Unit Title: Asthma and Health Careers</p> <p>https://www.kumc.edu/tscore-lift-ks/teach/asthma-and-the-clean-air-project.html</p>	<ul style="list-style-type: none"> • Obtained feedback on curricular unit and discussed potential hands-on labs in the classroom. • Met with an Environmental Health Specialist to discuss connections between asthma and the environment and a potential end of the unit assessment. • Better understood health disparities related to asthma in the local community. • Identified mechanisms to communicate with community stakeholders to address asthma as a public health issue. • Gained an understanding of the School of Health Professions (i.e., physical therapy, health information management, occupational therapy, audiology). 	<p>Educational experience to local health system campus to learn about the physiology of asthma, community and public health, and respiratory care careers</p>
<p>Content areas: Introduction to Health Care and Mathematics</p> <p>Unit Title: Probability and Public Health</p> <p>https://www.kumc.edu/tscore-lift-ks/teach/probability-and-public-health--the-</p>	<ul style="list-style-type: none"> • Met with biostatisticians to understand the role of applied statistics in biological and medical sciences for public health practice. • Discussed methods of data collection with faculty from the Dept. of Preventive Medicine and Public Health. • Integrated authentic data gathering and analysis skills applicable to community health advocacy, (i.e., photo-voice, community health assessments, 	<p>Students attend a Graduate Students Research Conference at KU Medical Center to present their advocacy projects in a poster format.</p>

<p>chance-the-researcher-project.html</p>	<p>observational interviews, and assessing community stakeholders) into their unit.</p> <ul style="list-style-type: none"> • <i>Learned about community advocacy in the region.</i> • <i>Acquired the contacts and resources needed for an end of unit project focused on health advocacy.</i> • Explored health careers involving mathematics, medical informatics, health information management, public health, and biostatistician. 	
<p>Content areas: Economics and ESL for the Health Science Academy</p> <p>Unit Title: The Change Project: Health Advocacy & Mobilizing Community</p> <p>https://www.kumc.edu/ts-core-lift-ks/teach/the-change-project-mobilizing-change.html</p>	<ul style="list-style-type: none"> • Met with Faculty in Preventive Medicine to discuss Upstream Social Determinants of Health in the county. • <i>Learned about Community Based participatory research and how it can be integrated into their teaching.</i> • Gained an understanding of different methods of data collection (i.e. interviews, photovoice, storytelling) that researchers use in community advocacy work. • <i>Met and connected with community partners and stakeholders to collaborate in organizing a Community Job Fair (I.e. Women’s Employment Network, KC Social Innovation Center, Hire KC Initiative and Summer Employment Program, KU Health System Talent Acquisition, Job Fairs at KU Hospital).</i> 	<p>A group of selected students attended the teacher externship with their teachers to empower them to lead the process of organizing a Community Forum and Job Fair at their high school.</p>
<p>Content areas: Mathematics and Science for the Health Science Academy.</p> <p>Unit title: Clean Water</p>	<ul style="list-style-type: none"> • Connected with an environmental health researcher, to learn about potential opportunities for field trips. • Obtained feedback on their existing curricular unit, particularly about how to design a lab and fundraise money for Drinking Water Test Kits. • Learned about federal, state, and local agency websites with resources around water safety they can use in their classroom instruction. • Discussed with experts the process of assessing and collecting data on environmental issues. 	<p>Students traveled to the Medical Center to learn about water testing, and how to disseminate information on water quality at their school.</p>

	<ul style="list-style-type: none"> • Traveled to a Water Treatment Plant to learn the science and engineering behind the water treatment process and how it impacts environmental and human health. • Connected with experts in the refugee and immigrant populations to learn about community resources for their students. • Learned about non-clinical jobs in healthcare. 	
--	--	--

In what follows, we provide a walk-through of an IEE by one of the participating teachers. Mrs. Richardson¹ submitted a request for an IEE to increasing the relevance and authenticity of a unit focused on Asthma with the following essential question: *How does Asthma affect the teenage body?* In her request, Mrs. Richardson noted that she was particularly interested in developing hands-on activities for students to understand the physiology of asthma as well as connecting with professionals in different healthcare fields who contribute to the prevention and treatment of asthma. During her IEE, Mrs. Richardson met with faculty in the Department of Population Health at the University of Kansas School of Medicine to receive feedback on her unit. As reported in her evaluation of the experience, Mrs. Richardson walked away with a plethora of resources including contacts at our local health department and two major curricular additions to her unit:

- **An entry event to kick start the unit** in the form of an Educational Experience at the Medical Center for students. During the visit, students learned about the physiology of breathing through a hands-on skills lab using stethoscopes and pulse oximeters and learned about asthma control using peak flow meters and spirometers. Additionally, students were introduced to community-based research, discussed methods of air quality measurement, risk factors associated with measurements, and how to apply these principles to larger public health issues. Students also learned about careers associated with asthma, including respiratory therapists, primary care doctors and nurses, pulmonologists, and environmental epidemiologists.
- **An enhanced end of the unit project.** Using observation and a survey of those attending the school, students explored the air quality of their school and identified ways in which environments they inhabit (home, school, work) have an impact on their ability to thrive. At the culmination of this project, students identified community organizations in which they wanted to share their findings and communicated with those community stakeholders to present their findings. Ultimately, students focused on bringing awareness about asthma to the community.

¹ Name is used with permission throughout this article.

We conducted interviews with teachers after their IEE experience. Our analysis of the data suggests that IEEs were beneficial to teacher curriculum development and student interest in the health sciences. Three main themes emerged from thematic analysis of the data: Professional Knowledge, Relationships and Networks, and Student Impact.

- **Professional Knowledge.** Throughout the interviews, teachers' commented on how the IEE externship increased their knowledge of health care and research practices. One such example was Teacher (B) who stated, "I really liked the biostatisticians and the researchers who helped us expand our view of what data collection should look like, what kinds of questions should students be asking, bias, things that I didn't know how to teach the kids. I left the day feeling like our project could be better next year because of our externship experience."
- **Relationship Building and Network Connection.** Teachers overwhelmingly stated that their personal network increased not only with professionals in the field but with professionals in their building and district. Teacher (A) stated, "I found out that we have a person here within the district and made contact with that person. She is more than happy to test my students, and screen my students, so we can use the information that we learned from audiology at KU and bring that back to the classroom." Through the IEEs, teachers learned how to use in-district resources within their own health and student services departments to increase professional capacity. Additionally, Teacher (B) stated that "Urban students don't have many opportunities to get connected with experts in our community. So one of the most essential pieces of the externship is us getting connected with people in our community, and getting their valuable insights, and incorporating that in our project." Enforcing positive relations built at the student-professional level are just as important as teacher-professional relationships. Teacher (B) continued by stating it is important for students to have "potential mentors, or somebody that [they] can ask questions because we [teachers] are definitely not the experts on a lot of things health-related." Additionally, the IEEs are widening their reach and impact on student perceptions, relations, interests, and knowledge about the different professions in medicine.
- **Student Impact.** Teachers commented on how the IEEs impacted student engagement and real-world connections with the content. Teacher (A) stated, "Every day we get the question, 'Why do we have to learn this, why does this matter?'" and this is framing our lessons and our projects in a really meaningful way." Student-oriented framing for the lessons allowed teachers to utilize externship resources and experiences for the greatest impact on student knowledge. Another teacher felt their students are not used to hearing the word yes but experienced empowerment, finding their voice, or felt that they have a say in what happens in their community (Teacher (B)) from the projects implemented after teacher IEEs. Therefore, individualized experiences compel teachers to make projects and lessons more relevant and meaningful to students.

Discussion

As CTE pathway participation increases, the need for strengthening CTE professional development opportunities for teachers, such as IEEs, continues to grow (Hasselquist & Graves, 2020; Shernoff et al., 2017). Teachers' professional development, particularly non-core teacher PD, is usually generic, lacks relevance, and fails to cultivate teacher ownership (Heermann & Grossman, 2021). Nevertheless, more than any others, CTE teachers are expected to facilitate workforce training that is up-to-date with the evolving workforce needs (Conneely & Hyslop, 2018). Providing IEEs for teachers through T-SCORE demonstrated key benefits in terms of professional development and network expansion. Teachers were able to meet a variety of professionals in their local medical center and rely on their expertise to answer questions and inform lesson content. Similar to what has been previously reported in the literature, the key to the success of the IEEs was their alignment with course competencies, clear and tangible outcomes, and teachers' needs as the driving force of the experiences (Macias, 2017; Szabo, 2022). Additionally, teachers that participated in an IEE cited worthwhile benefits for their students including opportunities to connect classroom learning to real-world experiences and dive deep into the "why" of the classroom content. CTE educators must have better resources to develop robust and relevant curricula to bridge them to healthcare careers and opportunities.

Lessons learned from T-SCORE IEEs include letting teachers initiate the experiences, aligning visits to industry partners with a specific set of lessons and competencies, providing support during implementations, and including cross-discipline experiences for teachers. Previous literature has emphasized that outside context experts, such as university professors and researchers, collaborating with teachers can develop their professional knowledge and thus provide an avenue for much-needed PD in CTE (Ermeling & Yarbo, 2016). Additionally, even more important, is to provide a clear externship request and planning process with ample support from the partnering institutions. This is particularly true when collaborating with under-resourced school districts, both urban and rural, where teachers tend to devote longer hours to delivering instruction, and fewer to professional development (Garcia & Weiss, 2019). In other words, industry partners "waiting for them to come" will continue to host the same, and already properly resourced, districts unless they engage in partnerships aimed at addressing some of the barriers faced by teachers in high-poverty schools. Further, having teachers initiate their own externship, and providing them with individualized experiences around their needs and schedules will increase the likelihood that CTE teachers can attend the externship and that they will incorporate what they learn in their curriculum design and implementations. Finally, aligning externships to a particular curricular unit allowed for collaborations to become a reality by making interactions with outside context experts at the local Academic Medical Center key components of the unit addressing the well-documented challenges that under-resourced school districts face in forming partnerships (Bridwell-Mitchell, 2017).

The impact of the study was limited due to the start of the COVID-19 pandemic and subsequent closing of the local Academic Medicine Center to non-essential personnel. Additionally, externship experiences can be limited by competing interests such as courses that can increase the salary schedule for teachers or limited time to complete professional development opportunities (Eroğlu & Donmuş Kaya, 2021). The current study took place in one type of school district, urban, and may not provide the best insight into how suburban and rural educators access externships and other types of professional development (Bowen et al., 2021;

Fauziyah & Uchtiawati, 2017; Pharis et al., 2019). Future research should examine the unique geographic and cultural factors that influence Kansas educators' access to professional development opportunities. Additionally, future implications for IEEs as teacher externships could award continuing education credits for engagement with the IEE and examine motivations for competing externships. Along with this, local medical centers can focus on increasing their engagement with CTE teachers in the health science pathway to increase the relevance of real-world application in classroom-based learning.

References

- Akgunduz, D., & Mesutoglu, C. (2021). Science, technology, engineering, and mathematics education for industry 4.0 in technical and vocational high schools: Investigation of teacher professional development. *Science Education International*, 32(2), Article 2. ERIC. <https://doi.org/10.33828/sei.v32.i2.11>
- Alignment Nashville. (2019). *Impact report 2018-2019*. <http://www.alignmentnashville.org/resources/>
- Asunda, P. A. (2014). A conceptual framework for STEM integration into curriculum through career and technical education. *Journal of STEM Teacher Education*, 49(1), Article 1. <https://doi.org/doi.org/10.30707/JSTE49.1Asunda>
- Beier, M. E., Kim, M. H., Saterbak, A., Leautaud, V., Bishnoi, S., & Gilberto, J. M. (2019). The effect of authentic project-based learning on attitudes and career aspirations in STEM. *Journal of Research in Science Teaching*, 56(1), 3–23. APA PsycInfo. <https://doi.org/10.1002/tea.21465>
- Bowen, B., & Shume, T. (2018). Educators in industry: An exploratory study to determine how teacher externships influence K-12 classroom practices. *Journal of STEM Education: Innovations & Research*, 19(1), 57–62. Academic Search Complete.
- Bowen, B., & Shume, T. (2020). Developing workforce skills in K-12 classrooms: How teacher externships increase awareness of the critical role of effective communication. *Journal of STEM Education: Innovations & Research*, 21(1), Article 1.
- Bowen, B., Shume, T., Kallmeyer, A., & Altimus, J. (2021). Impacts of a research experiences for teachers program on rural STEM educators. *Journal of STEM Education: Innovations & Research*, 22(4), 58–64.
- Bridwell-Mitchell, E. N. (2017). Them that's got: How tie formation in partnership networks gives high schools differential access to social capital. *American Educational Research Journal*, 54(6), 1221–1255. ERIC. <https://doi.org/10.3102/0002831217717815>
- Choi, D., & Linton, A. S. (2020). Classrooms as workplace: “Early pre-service” STEM teaching experience in a university-based summer STEM institute. *Journal of STEM Teacher Education*, 55(1), Article 2. <https://doi.org/10.30707/JSTE55.1/TDRC6648>
- Conneely, N., & Hyslop, A. (2018). CTE: Education for a strong economy. *Association for Career and Technical Education (ACTE)*. ERIC.
- Deever, A., Grubaugh, S., Levitt, G., & Gonzales, G. (2020). Why new career & technical education teachers leave, why new ones stay and how principals affect attrition and retention rates. *Journal of Education and Human Development*, 9. <https://doi.org/10.15640/jehd.v9n2a1>
- Educate Texas at Community Foundation of Texas. (2016). *Purpose of the T-STEM Externship Grant*. <https://www.edtx.org/our-impact-areas/college-career-readiness/college-and-career-readiness-models/blueprint-innovation-grants>
- Ermeling, B., A., & Yarbo, J. (2016). Expanding instructional horizons: A case study of teacher team-outside expert partnerships. *Teachers College Record*, 118(2), Article 2. <https://doi.org/10.1177/016146811611800204>
- Eroğlu, M., & Donmuş Kaya, V. (2021). Professional development barriers of teachers: A qualitative research. *International Journal of Curriculum and Instruction*, 13(2), 1896–1922. ERIC.

- Estes, A., & McCain, B. (2019). Four strategies to address equity in CTE. *State Education Standard, 19*(3), Article 3. ERIC.
- Fauziyah, N., & Uchtiawati, S. (2017). Developing a model of educators' professional training special for remote areas through the implementation of lesson study. *International Education Studies, 10*(8), 108–115. ERIC. <https://doi.org/10.5539/ies.v10n8p108>
- Gaikhorst, L., Beishuizen, J. J., Zijlstra, B. J. H., & Volman, M. L. L. (2015). Contribution of a professional development programme to the quality and retention of teachers in an urban environment. *European Journal of Teacher Education, 38*(1), Article 1. <https://doi.org/10.1080/02619768.2014.902439>
- Garcia, E., & Weiss, E. (2019). The teacher shortage is real, large and growing, and worse than we thought. *Economic Policy Institute*. ERIC.
- Geiger, T., & Pivovarova, M. (2018). The effects of working conditions on teacher retention. *Teachers and Teaching: Theory and Practice, 24*(6), Article 6. APA PsycInfo. <https://doi.org/10.1080/13540602.2018.1457524>
- Hasselquist, L., & Graves, N. A. (2020). CTE teacher retention: Lessons learned from mid-career teachers. *Career & Technical Education Research, 45*(1), Article 1. <https://doi.org/10.5328/cter45.1.3>
- Heermann, Z., & Grossman, P. (2021). Leveraging what we know for better PD. *Association for Supervision and Curriculum Development Articles Leverage, 16*(12). <https://www.ascd.org/el/articles/leveraging-what-we-know-for-better-pd>
- Ignited. (2020). *Our Impact*. <https://www.ignitededucation.org/about/impact/>
- Jacques, C., & Potemski, A. (2014). 21st century educators: Developing and supporting great career and technical education teachers. *Center on Great Teachers and Leaders*. ERIC.
- Kantrov, I. (2014). Opportunities and challenges in secondary career and technical education. *Education Development Center, Inc*. <https://careertech.org/resource/externships-work-based-learning-teachers>
- Kyees, L. (2014). *Rigor and academic achievement: Career academies versus traditional class structure*. [Doctoral dissertation, Liberty University] OpenDissertations database. <https://digitalcommons.liberty.edu/doctoral/912>
- Macias, A. (2017). Teacher-led professional development: A proposal for a bottom-up structure approach. *International Journal of Teacher Leadership, 8*(1), Article 1. ERIC.
- Oklahoma CareerTech. (2023, June 12). *Teacher Externships*. <https://oklahoma.gov/careertech/educators/work-based-learning/implementing-wbl/implementation-guide/teacher-externships.html>
- Pharis, T. J., Wu, E., Sullivan, S., & Moore, L. (2019). Improving teacher quality: Professional development implications from teacher professional growth and effectiveness system implementation in rural Kentucky high schools. *Educational Research Quarterly, 42*(3), 29–48. ERIC.
- Shernoff, D. J., Sinha, S., Bressler, D. M., & Ginsburg, L. (2017). Assessing teacher education and professional development needs for the implementation of integrated approaches to STEM education. *International Journal of STEM Education, 4*. ERIC. <https://doi.org/10.1186/s40594-017-0068-1>
- Szabo, S. (2022). Fostering more equitable teacher professional development at all stages using the systematic approach to teacher effective development (SATED) tool. *International Journal for Professional Educators, 89*(1), Article 1.

Appendix
IEE Request form



Name:

T-SCORE Professional Development: Teacher Externship

BACKGROUND: As a part of the T-SCORE professional development and the district's desire to provide engaging experiences for their teachers, we will be planning **individualized teacher externships for each teacher in [Insert MONTH(S) and YEAR]**.

GOAL: to provide opportunities to bridge classroom learning with the real-world. Each teacher will:

- Meet with experts in the field to present your unit, obtain feedback and increase rigor
- Deepen understanding of your unit's topic(s) and identify/develop relevant soft skills
- Increase collaboration with KUMC faculty; gain a mentor
- Design an educational experience for your students (i.e. field trip, guest speaker, etc.)
- Access information for potential future units

TEACHER NEEDS: Is there anything that you would like to learn more about? A topic, skill, or idea? Please list your top 4 ideas you would like to explore (see examples in blue below):

1. Health disparities & connection to body systems (ie stress due to health disparities and the effects on the cardiovascular system, etc)
2. Epidemiology & public health - are different socioeconomic/minority populations more vulnerable to certain outbreaks?
3. Health disparities and genetics/evolution/ecology (health disparities based on the environment, other organisms besides humans affected, how the health of other organisms relates to humans)
4. How stress from poor living conditions/minority status/socioeconomic status affects the body (similar to 1 but more specific), physiological differences in these populations vs. people in healthy living environments/non-minorities/high socioeconomic status

COLLABORATION PARTNER: Whom would you like to collaborate with? We encourage you to invite a core teacher that you can collaborate with.

Partner Name: N/A

Partner Email: N/A

Subject: N/A

Potential connection to your unit: N/A

DATES: What dates would be best for your externship? (see examples in blue below)

Choice 1: April 24th

Choice 2: May 1st

Choice 3: April 27th

LOGISTICS: Once a date has been determined for an externship, you will need to:

1. Obtain permission from your building principal.
2. Request a substitute.
3. Communicate with the relevant district or building staff once you receive permission and have secured a substitute.