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**Measuring the Potential Impact of Technology & Engineering Education Regional
Professional Development Conferences**

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Abstract

This study examines the potential impact of regional professional development conferences, specifically the Four-State Regional Technology Conference (FSRTC), on the recruitment and advancement of Technology and Engineering Education (T&EE) programs. Beginning in 1938, FSRTC has long served as a hub for professional growth, collaboration, and innovation for educators across Kansas, Missouri, Oklahoma, and Arkansas. The research responds to ongoing challenges in student recruitment and retention within T&EE teacher preparation programs, where secondary educators are identified as the most influential recruitment factor. Data was collected from surveys administered at the 74th (2023) and 75th (2024) FSRTC events, with responses capturing participant demographics, student outreach potential, and interest in future conference involvement. Findings reveal that many attendees were high school T&EE teachers, representing the largest potential student influence, with outreach numbers exceeding 8,000 students in 2023 and 6,000 in 2024. Nearly all attendees expressed interest in returning, demonstrating the conference's sustained value. However, relatively few indicated willingness to present, highlighting an area for further engagement. The study stresses how conferences like FSRTC not only enhance professional practice but also serve as strategic recruitment tools, linking educator development with the sustainability of post-secondary T&EE programs.

The Four-State Regional Technology Conference

Held annually in Pittsburg, Kansas at Pittsburg State University, the Four-State Regional Technology Conference (FSRTC) is a professional development conference for Technology & Engineering Education (T&EE) professionals with the first meeting of the conference taking place in 1938. Each of the meetings for the conference have been held on the campus of Pittsburg State University. The conference is designed to provide teachers with solutions to the challenges they face in the classroom, new perspectives and ideas to improve their students'

knowledge and skills. These solutions and ideas can include instructional techniques, organization and management applications, innovations in materials, tools and machines, instructional supplements such as textbooks, collaboration with other teachers and professors, promoting programs, how to work with administrations, state guidelines and policies, and funding as a few examples (Klenke, personal communication, 2023).

Historically, the conference is held on the second Thursday and Friday in November. The FSRTC was first introduced as the Four-State Conference on Industrial Arts and Vocational Education in 1938 on the campus of then Kansas State Teachers College of Pittsburg, Kansas. After just a few short years, the conference grew from a very specialized conference to a general regional conference. The first conference consisted of five presentations which were "The Problems of the Supervisor", "Techniques for Shop Organization and Class Management", "Industrial Arts for the Superintendent and Principal", "Philosophy of Education as Applied to Industrial Arts" and finally, "Improvement of Teachers in Service" (Powers, 1955). All sessions were two hours in length and were held over two days. Seven vendors took part in the first conference. The conference quickly grew from just 17 participants in 1938, 287 participants after World War II in 1947, and nearly reached 550 attendees in 1950. In 1985, the conference recognized and added "Technology Education" to the verbiage in its offerings after the American Industrial Arts Association (AIAA) changed their name to the International Technology Education Association (ITEA). The same is true when ITEA elected to add "engineering" to their name in 2011 (Reed & LaPorte, 2015) when they became the International Technology and Engineering Educator's Association (ITEEA).

Similar conferences include the Fall Conference hosted by the State University of New York (SUNY) Oswego, Illinois Technology Education Conference (ITEC), and the Rocky Mountain Colorado Technology Education Conference. Each of these conferences holds similar views to FSRTC and are recognized by or affiliated with ITEEA. These conferences also bring together T&EE professionals from the middle school, high school, and post-secondary levels. From its first inception, the precepts of FSRTC from the late 1930s included:

- Opportunity for contact with other teachers, and with state and national leaders who will be in attendance.
- More comprehensive understanding of the problems of the industrial arts teacher.
- Opportunity to acquire new ideas on teaching methods, materials and devices.
- Improvement of the status of industrial arts in public education.
- Improved understanding of the place and importance of industrial arts on the part of the school administrators.
- Improvement in pride, enthusiasm, and self-confidence on the part of the industrial arts teacher.
- Personal/professional growth, especially for those who participate.
- In connection with commercial exhibits, there is an opportunity to examine tools, machines, materials, books, and other teaching aids not usually accessible by teachers in the small community.

While the terms have changed (e.g., industrial arts) the ideas have not. When planning the conference each year, each of the precepts is carefully taken into account.

The conference is also known for being a location in which Technology and Engineering Education Collegiate Association (TEECA) student chapters can participate in competitions against universities within the region. Common chapters which participate annually include Pittsburg State University and Fort Hays State University with other chapters participating periodically including University of Arkansas, Wayne State College, University of Northern Iowa, University of Wyoming, and University of Wisconsin-Stout.

The conference has had years where it did not meet. During World War II, it took a five-year hiatus. In 2012 at the 70th FSRTC, it was thought it would be of best interest to look at different avenues for the conference and in 2013 the conference was replaced with the International STEM Education Association (ISEA) conference held in Branson, MO. ISEA held its final conference in October of 2018. After recognizing the need for a professional development conference after ISEA ceased operations, the Kansas Technology and Engineering Education Association (KTEEA) decided to hold an annual meeting at Pittsburg State University in the Spring of 2019. It was decided during this meeting that FSRTC be revived and the 71st Conference would be held during the Fall of 2019. This revived conference saw over 200 attendees from the four-state region. In 2020, due to the COVID-19 pandemic, the 72nd conference was held virtually and had attendees not just from United States but also Design and Technology teachers from Canada, Ireland, Australia, and the United Kingdom. The conference has continued to meet annually since its revival in 2019.

Statement of the Problem

There is evidence to say there is a crisis in recruitment and retention of students into T&EE preparation programs (Volk, 1997, 2000, 2019; Moye, 2017). There are several contributing factors to this decline in the profession, but Volk (2019) describes some of these reasons as costs associated with maintaining T&EE programs, educational initiatives, as well as negative perceptions of the teaching career. Negative perceptions could include low salaries, poor pension systems, and even the high expectations of teachers within the profession (Ujifusa, 2018). Love & Love (2022) found that the most influential factor in a student's decision to choose a T&EE preparation program is their secondary level T&EE teacher. Gray and Daugherty (2004) indicated in their study that 95% of faculty members utilized face-to-face visits for recruitment, while only 6% of students acknowledged this as being effective. It is evident over various studies that the secondary level T&EE teacher is whom post-secondary T&EE instructors must target in order to recruit for their programs (Devier, 1982; Sanders, 1986; Isbell & Lovedahl, 1989; Love et al., 2016; Love & Love, 2022).

McCalister (2012) determined there are three main benefits for attendees who attend T&EE professional development conferences. These include the ability to gain information while staying up-to-date, making personal and professional connections, and valuing the opportunity for discussion and exchange of new ideas. While there are several benefits for attendees when participating in regional professional development conferences, there are potential benefits for faculty and host universities as well. The following research questions (RQ) helped guide the study to focus on these other benefits:

RQ1: What is the potential student outreach for attendees of FSRTC?

RQ2: How likely are attendees to return to a future conference?

RQ3: How likely are attendees to present at a future conference?

Methods

Participation in the study was open to anyone who attended either the 74th FSRTC (held on Nov. 9-10, 2023) and/or the 75th FSRTC (held on Nov. 7-8, 2024). At each of the conferences, participants were given their registration packets when they checked in. In this packet, participants were given a printed copy of the conference program, name badge, as well as a survey. Participants were informed the survey was voluntary, however if they filled the survey out, it would be placed into a drawing for a door prize provided by one of the vendors of FSRTC. This survey asked four simple questions:

1. Name and contact information
2. Would you like to attend next year's conference?
3. Would you be interested in presenting a session and/or workshop at next year's conference?
4. What suggestions do you have for sessions or workshops for next year's conference?

Participants were also asked at registration, "How many students do you see in your classroom on a daily basis?". This question was asked to all secondary classroom teachers. If the attendee was not a classroom teacher (i.e., School District CTE Director) they were asked, "How many teachers do you work with on a daily basis?".

Findings

The basic demographic information for attendees from the 74th (Table 1) and 75th (Table 2) conferences show the overall attendance numbers as well as their position title/classification. Total attendance at the 74th FSRTC was 138 attendees and 91 attendees for the 75th FSRTC.

Table 1

74th FSRTC Attendees by Classification (N = 138)

Position Title/Classification	n (%)
High School Teacher (CTE/T&EE)	86 (62)
Middle School Teacher (CTE/T&EE)	18 (13)
High School & Middle School Teacher (CTE/T&EE)	11 (9)
Community/Technical College Instructor	9 (7)
School District CTE Director/Coordinator	6 (4)
University Faculty Members*	6 (4)
State Director for CTE/T&EE	1 (1)

Note. University faculty members from the host university were excluded from the total number because an accurate total is difficult to measure since not all members from the host university registered for the event.

For the 74th FSRTC, the largest total of attendees was 86 High School Teachers (62%) whereas the lowest total was State Director for CTE/T&EE with only one in attendance. After reviewing the demographics of the 75th FSRTC, there was a 34% decrease in attendance compared to the previous year with High School Teachers, once again, being the largest number of attendees (51%).

Table 2

75th FSRTC Attendees by Classification (N = 91)

Position Title/Classification	n (%)
High School Teacher (CTE/T&EE)	46 (51)
Middle School Teacher (CTE/T&EE)	6 (7)
High School & Middle School Teacher (CTE/T&EE)	28 (31)
Community/Technical College Instructor	5 (5)
School District CTE Director/Coordinator	2 (2)
University Faculty Members*	3 (3)
State Director for CTE/T&EE	1 (1)

Note. University faculty members from the host university were excluded from the total number because an accurate total is difficult to measure since not all members from the host university registered for the event.

When reviewing the location of the teachers in attendance, it's important to note the region in which FSRTC promotes. The region, historically, consists of Kansas, Missouri, Oklahoma, and Arkansas. However, there are attendees who participate in the conference from beyond these four states. Usually this is because of the TEECA event competitions, but it is not unusual for attendees outside of TEECA to participate from Iowa, Nebraska, Colorado, and Texas. This happens for various reasons, such as word of mouth, promotion at various Career and Technical Student Organization events (i.e., Technology Student Association and SkillsUSA), and, in more recent years, social media promotion (Iley, personal communication, 2024). The basic geographical location information for attendees from the 74th (Table 1) and 75th (Table 2) conferences show the overall attendance numbers by state.

Table 3*74th FSRTC Attendees by Location (N = 138)*

Location of Attendee	n (%)
Kansas	107 (77)
Missouri	21 (15)
Oklahoma	9 (7)
Wisconsin	1 (1)
Arkansas	0 (0)

Note. The total number does not include university Technology and Engineering Education Collegiate Association (TEECA) students who were in attendance. Arkansas was included because it is traditionally one of the states located within the four-state region identified by the conference. The one attendance number for Wisconsin was the advisor for the TEECA group of the University of Wisconsin-Stout.

Table 4*75th FSRTC Attendees by Location (N = 91)*

Location of Attendee	n (%)
Kansas	59 (65)
Missouri	22 (24)
Oklahoma	10 (11)
Arkansas	0 (0)

Note. The total number does not include university Technology and Engineering Education Collegiate Association (TEECA) students who were in attendance. Arkansas was included because it is traditionally one of the states located within the four-state region identified by the conference.

Across both conferences Kansas remained the largest number of attendees, accounting for 75% of the attendance. Conversely, Oklahoma remained the lowest number of attendees across both conferences, accounting for 9% of the attendance. It should be noted that Arkansas remained at zero for unknown reasons. Arkansas, traditionally, always has had a strong showing in numbers at the conference. However, contact with teachers in the state and directors has been met with

little to no interest. This could be for a number of reasons, including but not limited to, travel restrictions set by the state or budgetary concerns.

To determine the outreach of each category of attendee, each individual was asked the number of students they see each day. If they were a director or university faculty member, they were asked how many teachers they work with within their districts or how many students are in their T&EE teacher preparation program, respectively.

Table 5

74th FSRTC Attendees Student Outreach (N = 8134)

Position Title/Classification	Student Outreach n (%)
High School Teacher (CTE/T&EE)	6371 (78)
Middle School Teacher (CTE/T&EE)	625 (8)
High School & Middle School Teacher (CTE/T&EE)	891 (11)
Community/Technical College Instructor	247 (3)

Note. FSRTC Attendees which don't work directly with students were excluded from the list. These include School District CTE Directors/Coordinators and State CTE/T&EE Directors.

Table 6

75th FSRTC Attendees Student Outreach (N = 6234)

Position Title/Classification	Student Outreach n (%)
High School Teacher (CTE/T&EE)	4337 (70)
Middle School Teacher (CTE/T&EE)	284 (5)
High School & Middle School Teacher (CTE/T&EE)	1461 (23)
Community/Technical College Instructor	152 (2)

Note. FSRTC Attendees which don't work directly with students were excluded from the list. These include School District CTE Directors/Coordinators and State CTE/T&EE Directors.

When looking at this data, the number of students seen on a daily basis is encouraging when looking at recruitment for post-secondary T&EE preparation programs. The highest number of

students seen daily are from high school teachers, however this correlates with the attendance numbers previously shown. While community/technical college instructor outreach numbers were low, so were the attendance numbers of these individuals. It should also be noted that while these numbers are low, this is a population that is often looked over when discussing recruitment efforts. Love (2022) stated that while reviewing previously studies, it was found “as many as 75% of students do not make their career choice until after high school” (p. 10).

Table 7

74th FSRTC Attendees Return Attendance | Presentation Agreement

Position Title/Classification	Would Return (% of group)	Would Present
High School Teacher (CTE/T&EE)	86 (100)	2
Middle School Teacher (CTE/T&EE)	16 (89)	0
High School & Middle School Teacher (CTE/T&EE)	9(82)	0
Community/Technical College Instructor	8(89)	0
School District CTE Director/Coordinator	6(100)	0
University Faculty Members*	6(100)	3
State Director for CTE/T&EE	1(100)	0

Note. N = 138

Table 8

75th FSRTC Attendees Return Attendance | Presentation Agreement

Position Title/Classification	Would Return (% of group)	Would Present
High School Teacher (CTE/T&EE)	46 (100)	1
Middle School Teacher (CTE/T&EE)	5 (83)	0
High School & Middle School Teacher (CTE/T&EE)	26 (93)	1
Community/Technical College Instructor	5 (100)	0
School District CTE Director/Coordinator	2 (100)	1
University Faculty Members*	3 (100)	2
State Director for CTE/T&EE	1 (100)	0

Note. N = 91

Recommendations for Future Research

This study brought the idea of recommendations for future research. Future research should explore the barriers that prevent participation from educators in underrepresented regions, particularly Arkansas, to better understand issues related to funding, policy, or awareness that may be limiting involvement. Additionally, a longitudinal study could be conducted to examine whether students taught by FSRTC attendees are more likely to enroll in post-secondary T&EE programs, thereby providing measurable evidence of the conference's recruitment impact. Another important area of study involves investigating the reasons behind the relatively low number of attendees who express interest in presenting at future conferences. Understanding these deterrents, such as time constraints, lack of confidence, or limited institutional support, could lead to the creation of targeted initiatives like presenter training or recognition programs. Comparative studies between FSRTC and similar regional conferences across the country could also reveal best practices and regional influences on professional development success. Lastly, further investigation is needed into the role of community and technical college instructors, who, despite limited attendance and outreach, may hold untapped potential in recruiting students who make career decisions beyond high school.

Summary

The findings of this study underscore the significant impact that regional professional development conferences, such as the FSRTC, can have on the recruitment and advancement of T&EE programs. Through its long-standing tradition and commitment to the core tenets of professional growth, FSRTC continues to serve as a critical touchpoint for secondary and post-secondary educators. Data from the 74th and 75th conferences reveal not only strong attendance from high school educators, the primary influencers of future T&EE students.

The consistent willingness of attendees to return to and participate in the conference demonstrates its perceived value. However, the modest number of educators willing to present suggests an opportunity to further cultivate leadership and engagement within the T&EE community. The regional outreach has also shown gaps, most notably with continued absence from Arkansas educators despite the state being central to the conference's identity.

This research contributes to the ongoing conversation around how professional development conferences can do more than serve educators, they can act as strategic recruitment tools for post-secondary teacher preparation programs.

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