Assessing the Impact of Prior Teaching on Administrators' Perceived Security in Career and Technical Education (CTE) Facilities

Trevor Hajek
tch86@txstate.edu

Douglas Morrish
dm43@txstate.edu

Eryn Pierdolla
elp73@txstate.edu

Hannah Goebel
yai7@txstate.edu

Elizabeth Ekren
syd14@txstate.edu

Rachel Hall
rhall12@txstate.edu

Valerie Barnes
vrb25@txstate.edu

Alison Jarzombek-Torralva
sxd6@txstate.edu

Kathy Martinez-Prather
km60@txstate.edu

Texas State University
601 University Drive
San Marcos, TX 78666
512-245-3321

Assessing the Impact of Prior Teaching on Administrators' Perceived Security in Career and Technical Education (CTE) Facilities

Introduction

Crime prevention in Career and Technical Education (CTE) settings has become an extremely hot topic as a series of unfortunate events has plagued the nation throughout history and school threats are noticeably increasing in number. As a result, the principles of Crime Prevention Through Environmental Design (CPTED) have been introduced, specifically focused within Texas as the state ranks fourth in frequency of violent incidents, seventh in frequency of violent threats, and second in number of school shootings since 1970 (Riedman, 2023). Research on safety planning in CTE classrooms remains limited to enhancing occupational safety and health (OSH) and procedural safety (Gilbert, 2013; Love, Roy & Sirinides, 2023; Love & Roy, 2023; Schulte et al., 2005). The purpose of this study is to identify if prior CTE teaching experience influences Texas school administrators' perceptions of facility security in their school's CTE facilities.

Conceptual Framework

Aligning facility design with security needs has been expressed by many individuals and organizations. However, the lack of research pertaining to the cohesive combination of CPTED security and CTE facilities aligning with one another needs to be addressed to determine if the two can be better aligned for comprehensive protection against external threats (Butcher & Manning, 2003; Yell & Rozalski, 2000). Furthermore, the idea of aligning needs can only be done once the perceptions of school administrators have been identified regarding CTE security.

Security adherence levels were categorized into four main constructs of CPTED: 1) **Natural surveillance** measured how well the space provides visibility and monitoring; 2) **Image** assessed how a stakeholder perceives the safety of a facility space; 3) **Personal investment** or participation/pride of the stakeholder as it relates to the space; and 4) **Outside threats**, both man-made and natural, were addressed to assess the safety of the environment (Crowe & Fennelly, 2013; CDC, 2017; Kim et al., 2020).

Methodology

To assess prior CTE experience influence on perceptions of facility security, an instrument was created and reviewed by five experts for content and face validity and then piloted to determine reliability of the four CPTED constructs: natural surveillance ($\alpha = .90$), image ($\alpha = .94$), personal investment ($\alpha = .91$), and outside threat security perceptions ($\alpha = .67$). The only section with a lower alpha ($\alpha = .67$) was reworded to increase clarity and reduce statement length. Questions within each construct were evaluated on a 5-point Likert-scale (1=Strongly Disagree; 5=Strongly Agree). The target population of this study was 3,229 middle and high-school administrators in Texas who received an anonymous Qualtrics survey link. Of those receiving the survey, 181 responses (5.60% total response rate) were deemed usable after data cleaning and exported to IBM's SPSS 27. Inferential statistics were calculated using independent samples t-test with a priori alpha levels set at 0.05.

Results

The objective of this study sought to identify if prior CTE teaching experience affected school administrators' perceptions of the security of their campus CTE facilities. As shown in Table 1, of the 181 secondary administrators, 56 had CTE teaching experience while 125 did not. An independent sample t-test indicated that there was no significant effect for three of the four constructs (**Natural Surveillance**, $t(179) = .282$, $p = 0.78$ **Personal Investment,** $t(179) = .614$, $p = 0.54$ and **Outside threat**, $t(179) = .1.43$, $p = 0.15$. However, there was small statistical significance for **Image**, $t(179) = 2.09$, $p = 0.04$, ($p < 0.05$) Those with CTE experience ($M = 3.84$, $SD = 0.72$) had a significantly lower mean than those without CTE experience ($M = 4.08$, $SD = 0.68$).

Table 1

Effects of Prior CTE Teaching Experience on Administrators' Perceptions of the Security of Career and Technical Education Facilities

CPTED	CTE (n = 56)		Non-CTE (n = 125)				
	M	*SD*	*M*	*SD*	*t*	*p*	Cohen's d
Natural Surveillance	3.18	0.79	3.22	0.92	.282	0.78	.045
Image	3.84	0.72	4.08	0.68	2.09	0.04	.335
Personal Investment	3.79	0.75	3.86	0.66	.614	0.54	.099
Outside Threat	3.66	0.62	3.80	0.60	1.43	0.15	.230

Conclusions

The study aimed to determine if prior CTE teaching experience had an impact on administrator's perceptions of facility safety. The results showed no significant differences in three of the four CPTED constructs. However, after reviewing the results and identifying that **Image** had a small statistical significance, assumptions can be made that the results show the need for further security planning, hardening, and safety audits for schools. These findings suggest that CTE-experienced administrators may have a more critical view or higher standards for the safety of their facilities in comparison to their counterparts (non-CTE).

Implications / Recommendations

The findings of this study provide significant insights into the future needs of CTE security planning and hardening and facility upkeep. The literature indicates that general school hardening activities (e.g., metal detectors, cameras, school police) for external threat prevention (Borum, Cornell, Modzeleski & Jimerson, 2010; Kim, Carlson & Nelson, 2021) has taken place, but unique features of CTE facilities pose a challenge in doing the same. Finally, future research should aim to better understand barriers to adopting CPTED principles in CTE programs, as well as gather more direct perspectives of CTE students, staff, and other campus stakeholders, as their facility security perceptions may differ from administrators.

References

Borum, R., Cornell, D. G., Modzeleski, W., & Jimerson, S. R. (2010). What can be done about school shootings?: A review of the evidence. *Educational Researcher*, *39*(1), 27-37. doi: 10.3102/0013189X09357620

Butcher, K. T., & Manning, M. L. (2003). Challenges and suggestions for safe schools. *The Clearing House*, *76*(3), 160-164. doi: 10.1080/00098650309601995

Centers for Disease Control and Prevention. [CDC] (2017). *Crime prevention through environmental design (CPTED) school assessment (CSA).* National Center for Injury Prevention and Control, Division of Violence Prevention. https://stacks.cdc.gov/view/cdc/46282

Crowe, T., & Fennelly, L. J. (2013). *Crime Prevention Through Environmental Design.* Elsevier.

Gilbert, A. (2013). *Identifying the characteristics, use, perceptions, and barriers of the school farm* (Master's thesis). Retrieved from Texas Tech University Libraries Electronic Theses and Dissertations. https://ttuprimo.hosted.exlibrisgroup.com/permalink/f/1j33bpi/TN_cdi-_ttu_thinktech_oai_ttu_ir_tdl_org_2346_48873

Kim, H., Carlson, J. S., & Nelson, S. R. (2021). Towards a three-dimensional hardening of schools to promote effective school safety practices in the United States: A systematic review. *Advances in Social Sciences Research Journal*, *8*(8), 147-162. doi: 10.14738/assrj.88.10614

Kim, S., Nubani, L., Kim, J., Qu, T. T., & Son, J. J. (2020). *Providing safe school environments: Crime prevention through environmental design*. https://ippsr.msu.edu/public-policy/michigan-applied-public-policy-research-mappr/paper-archive

Love, T. S., & Roy, K. R. (2023). Critical safety considerations to support CTE. *Techniques, 98*(1), 32-35. https://www.acteonline.org/tech-safety-practices/

Love, T. S., Roy, K. R., & Sirinides, P. (2023). A national study examining safety factors and training associated with STEM education and CTE laboratory accidents in the United States. *Safety Science*, *160*. doi: 10.1016/j.ssci.2022.106058

Riedman, D. (2024). *K-12 School Shooting Database*. https://k12ssdb.org/

Schulte, P. A., Stephenson, C. M., Okun, A. H., Palassis, J., & Biddle, E. (2005). Integrating occupational safety and health information into vocational and technical education and other workforce preparation programs. *American Journal of Public Health*, *95*(3), 404-411. doi: 10.2105/ajph.2004.047241

Yell, M. L., & Rozalski, M. E. (2000). Searching for safe schools: Legal issues in the prevention of school violence. *Journal of Emotional and Behavioral Disorders*, *8*(3), 187-196. doi: 10.1177/106342660000800306