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Predictors of Post-Traumatic Stress Disorder in Adolescents: Loneliness and Self-Compassion

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Abstract

This study investigated the associations between adolescents' self-compassion, loneliness, and post-traumatic stress levels. The study also revealed the predictive role of self-compassion and loneliness on post-traumatic stress. Additionally, post-traumatic stress levels in adolescents were compared by gender, exposure to or witnessing trauma, and whether the individuals previously sought psychological assistance. Adopting a correlational design, the study population included adolescents aged 14-18 living in Türkiye. On the other hand, the study group consisted of 351 adolescents who were reached through simple random sampling. The participants lived in various parts of Türkiye and were exposed to or witnessed traumatic experiences. They responded to the scales online. Posttraumatic Stress Disorder Checklist for DSM-5, Self-compassion Scale for Adolescents, UCLA Loneliness Scale and Demographic Survey Form were used as data collection tools. The significance level was .05. The study concluded that higher levels of self-compassion indicate lower post-traumatic stress. Additionally, lower levels of loneliness indicate higher levels of post-traumatic stress. Self-compassion and loneliness significantly predicted post-traumatic stress in adolescents. The findings suggested that females had significantly higher levels of post-traumatic stress. Lastly, it was concluded that adolescents who sought psychological assistance and had exposure to trauma had significantly higher levels of post-traumatic stress.

Keywords: Adolescence, Posttraumatic Stress, Self-Compassion, Loneliness.

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INTRODUCTION

Traumatic life events lead to significant mental health problems in children and adolescents, and these adverse effects last long (Karakaya et al., 2004). Post-traumatic stress reactions in adolescents are identity crises, grief, guilt and shame, depression, anxiety, social withdrawal, aggression, decreased faith in life and the world, hopelessness, self-harm, loss of interest in school activities, lower self-confidence and self-esteem, challenging authority, academic failure, risky behaviors, and drug use (Qllgaard, 2017; Cohen, 2003).

However, research suggests that some protective factors might reduce or prevent the effect of trauma in possible post-traumatic stress disorders. Some adolescents experience shorter-term adjustment disorders, mild depression, or non-severe mental problems after a challenging life event (Baştuğ, 2017). For example, in a study conducted with adolescents aged 14-18 who survived an explosion in Iran, 25.6% had post-traumatic stress symptoms (Hemmati et al., 2015).

Self-compassion, which results in higher psychological resilience and is one of the variables dealt with in this study, also has a protective effect on individuals' mental health (Neff et al., 2007). It also protects individuals from anxiety and depression. Applying self-compassion-based cognitive-behavioral therapies following traumatic experiences significantly improves post-traumatic stress symptoms (Macbeth & Gumley, 2012; Valdez & Lilly, 2016).

This study investigates the association between adolescents' post-traumatic stress level (PTSD) and loneliness, which has recently become more common in adolescents and adults. Although loneliness can be defined as the isolation of the individual by the social environment, it can also be conceptualized as self-isolation due to mental health based on life experiences (Erözkan, 2009). Adolescence is the stage when loneliness is experienced most frequently by individuals (Brennan, 1982). Adolescents facing difficult life events may feel lonely when they cannot find the support they are looking for (Avcı & Yıldırım, 2014).

There is limited research on post-traumatic stress in adolescents. Teke and Avşaroğlu (2020) suggested that only one study was conducted on post-traumatic stress in adolescents in Türkiye. In this sense, it is anticipated that the current study can have significant implications for psychological assistance services and psychoeducation interventions to improve and protect adolescents' mental health. The findings of this study will also contribute to the limited knowledge base in the literature. This study hypothesized loneliness and self-compassion as predictors of adolescents' post-traumatic stress levels. The study sought answers to the following questions:

1. Are there statistically significant associations between PTSD, self-compassion, and loneliness in adolescents exposed to trauma?
2. Do self-compassion and loneliness significantly predict PTSD?
3. Do post-traumatic stress levels of adolescents statistically significantly differ by gender, exposure to trauma or witnessing trauma and whether they have had psychological assistance before?

METHOD

Research Design

The current study adopted a correlational design to investigate the correlations and predictive associations between variables. The correlational design aims to measure the presence of co-variation among several variables (Karasar, 1999, s. 81-82).

Study Group

The population of the study consists of adolescents aged 14-18. On the other hand, adolescents exposed to trauma or witnessed traumatic experiences were included in the study through random sampling. The participants lived in different parts of Türkiye and responded to the scales online. The online data collection procedure was preferred to reach the participants more easily. The online link included data collection tools, participation approval, and an informed consent form. The link was delivered to 936 adolescents; 917 voluntarily accepted to participate in the study. Among them, 351 declared that they had experienced or witnessed traumatic experiences. In conclusion, data analysis was conducted on a data set collected from 351 adolescents. Table 1 presents the demographic characteristics of the participants.

Table 1. Demographic characteristics of the participants

		<i>f</i>	%
Gender	Female	250	71.2
	Male	101	28.8
	Total	351	100.0
Age	14	54	15.4
	15	96	27.4
	16	98	27.9
	17	75	21.4
	18	28	8.0
	Total	351	100.0
Mother's education	Illiterate	6	1.7
	Primary school	85	24.2
	Secondary school	78	22.2
	High school	120	34.2
	University	50	14.2
	Graduate	12	3.4
	Total	351	100.0
Father's education	Illiterate	2	.6
	Primary school	53	15.1
	Secondary school	55	15.7
	High school	116	33.0
	University	112	31.9
	Graduate	13	3.7
Income level	Low	120	34.2
	Middle	206	58.7
	High	25	7.1
	Total	351	100.0

Table 1 presents the frequency distribution of the adolescents in the study group by gender, age, mother's and father's education, and monthly income level.

Data Collection Tools

We used Post-traumatic Stress Disorder Checklist for DSM-5, Self-compassion Scale for Adolescents, UCLA Loneliness Scale, and Demographic Survey Form to collect data. Below is detailed information about these tools.

Post-traumatic Stress Disorder Checklist for DSM-5

The Post-traumatic Stress Disorder Checklist for DSM-5 is 20 item measure. The options are responded to on a 5-point Likert-type scale, with 0 corresponding to "Not at all" and 4 "Extremely." It assesses the presence and severity of DSM-5 symptoms of PTSD. Responding to the items, the participants think about a bothering experience occupying their minds, and they indicate how often they had the symptoms of post-traumatic stress over the last month. The cutoff score is 47 to diagnose the disorder. Blevins et al. (2015) reported Cronbach's Alpha coefficient as $\alpha=.94$ and test-retest

reliability coefficient as .82. Boysan et al. (2017) adapted the scale into Turkish, and this version had a consistent factor structure with the original one (flashbacks, avoidance, negative alterations, and hyper-arousal). Cronbach's Alpha coefficients ranged between $\alpha=.73$ and $\alpha=.94$, and test-retest reliability between .64 and .78 for the dimensions and the overall scale. On the other hand, the sensitivity and specificity of the scale were .76 and .69, respectively.

Self-Compassion Scale for Adolescents

The short form of the self-compassion scale for adolescents with 12 items loading on two dimensions was used. Turkish adaptation of this form was conducted by Büyüköksüz and Erözkan (2021). It is a 5-point Likert-type scale, with "1" corresponding to "Almost Never" and 5 to "Almost Always." It is a self-report scale to measure self-compassion level. The negatively phrased items are reverse-coded (1,4,8,9,11, and 12), which should be recoded to calculate the total score (1=5; 2=4; 4=2; 5=1). The total score ranges from 12 to 60; higher scores indicate higher self-compassion. Cronbach's Alpha coefficient was $\alpha=.80$, and Pearson's Correlation coefficient was ($r=.87$), revealing the test-retest reliability.

UCLA Loneliness Scale

The scale was developed by Russell, Peplau, and Ferguson (1978), and subsequently revised by Russell, Peplau, and Cutrona (1980). Demir (1989) conducted Turkish adaptation of the scale. Cronbach's Alpha coefficient was reported as $\alpha=.96$, and test-retest reliability was $r=.94$. There are 20 items on the scale, ten reversely coded. The items include feelings or thoughts about interactions, and participants are asked to indicate how often they thought or felt this way. This is a 4-point Likert-type scale. The positively phrased items (1,4,5,6,9,10,15,16,19, and 20) are scored as "4=I often feel this way, 3=I sometimes feel this way, 2=I rarely feel this way, and 1=I never feel this way". On the other hand, negatively phrased items (2,3,7,8,11,12,13,14,17, and 18) are scored as "1=I often feel this way, 2=I sometimes feel this way, 3=I rarely feel this way, and 4= I never feel this way". The scores of each item are summed to obtain a total score. The score ranges from 20 to 80, and higher scores indicate more loneliness (Demir, 1989).

Demographic Survey Form

The form collects participants' demographic data such as gender, age, mother's and father's education, socio-economic level, whether the participants sought psychological/psychiatric assistance, and whether the participants experienced or witnessed traumatic experiences.

Data Analysis

The data analysis was conducted through SPSS 22 and the confidence interval was 95%. Descriptive statistics such as frequencies and percentages were used to reveal the demographic characteristics of participants. The data distribution was checked to decide whether to use parametric or non-parametric tests, calculating skewness and kurtosis coefficients. Table 2 presents the findings.

Table 2. Descriptive statistics and Skewness-Kurtosis coefficients

Variables	N	Mean	Sd	Skewness		Kurtosis	
	Statistics	Statistics	Statistics	Statistics	SE	Statistics	SE
Post-traumatic Stress	351	2,40	,95	-,566	,130	-,384	,260
Self-compassion	351	2,68	,60	,294	,130	-,296	,260
Loneliness	351	3,05	,35	,137	,130	-,662	,260

As Table 2 presents, skewness, and kurtosis coefficients range between -1.5 and +1.5, indicating the data's normal distribution (Tabachnick & Fidell, 2013). Based on these findings, to compare adolescents' PTSD scores by gender, whether the participants sought psychological/psychiatric assistance, and whether the participants experienced or witnessed traumatic

experiences, t-test was conducted. Additionally, the Pearson Correlation coefficient was computed to reveal the associations between PTSD, self-compassion, and loneliness, and for predictive relationships, Multiple Linear Regression analysis was conducted.

FINDINGS

This section presents the findings regarding the research questions.

Table 3. Comparison of adolescents' post-traumatic stress levels by gender

Variable	Gender	N	Mean	Sd	t	p
Post-traumatic stress level	Female	250	51,52	17,45	6,05	,000
	Male	101	38,69	19,21		

Table 3 presents t-test findings regarding the comparison of adolescents' post-traumatic stress levels by gender. The findings suggested that there was a statistically significant difference between females and males ($p=.00$; $p<.05$). The findings indicated that female adolescents' mean scores ($x=51.52$; $Sd=17.45$) were statistically significantly higher than male adolescents' ($x=38.69$; $Sd=19.21$) which suggested females' post-traumatic stress level were higher than males.

Table 4. Comparison of adolescents' post-traumatic stress levels by seeking psychological/psychiatric assistance

Variable	psychological/psychiatric assistance	N	Mean	Sd	t	p
Post-traumatic stress level	Yes	74	54.08	16.11	3.25	,001
	No	277	46.15	19.22		

Table 4 presents t-test findings regarding the comparison of adolescents' post-traumatic stress levels by seeking psychological/psychiatric assistance or not. The findings suggested that there was a statistically significant difference between adolescents' post-traumatic stress levels by seeking psychological/psychiatric assistance or not ($p=.001$; $p<.05$). Post-traumatic stress levels of adolescents who sought psychological/psychiatric assistance ($x=54.08$; $Sd=16.11$) were statistically higher than of those who did not ($x=46.15$; $Sd=19.22$).

Table 5. Comparison of adolescents' post-traumatic stress levels by exposure to trauma or witnessing trauma

Variable	Traumatic experience	N	Mean	Sd	t	p
Post-traumatic stress level	Exposure to trauma	211	51,3	17,9	4,46	,000
	Witnessed trauma	140	42,4	19,0		

Table 5 presents t-test findings regarding the comparison of adolescents' post-traumatic stress levels by exposure to or witnessing trauma. The findings showed that there was a statistically significant difference between the two groups ($p=.000$; $p<.05$). Post-traumatic stress level of adolescents who had direct exposure to trauma ($x=51.3$; $Sd=17.9$) was statistically higher than those who witnessed trauma ($x=42.4$; $Sd=19.0$).

Table 6. The correlations between adolescents' post-traumatic stress, self-compassion, and loneliness

		1	2	3
1. Post-traumatic stress	r	1		
	p			
2. Self-compassion	r	-,372**	1	
	p	,000		
3. Loneliness	r	,373**	-,319**	1
	p	,000	,000	
N		351	351	351

**Correlation is significant at the .01 level (2-tailed).

As Table 6 shows, there is a statistically significant negative association between adolescents' post-traumatic stress and self-compassion levels ($r=-,372$; $p=.00$; $p<.05$); a statistically significant positive association between adolescents' post-traumatic stress and loneliness levels ($r=.373$; $p=.00$; $p<.05$). These findings imply that as adolescents post-traumatic stress levels increase, their self-compassion decrease and as their loneliness levels increase their post-traumatic stress levels increase.

Table 7. Loneliness and self-compassion in adolescents as predictors of post-traumatic stress levels

Model	B	SE	β	t	p	Binary r	Partial r
(Constant)	49.35	6.69		7.372	.000	49.35	6.69
Loneliness	-.73	.13	-.282	-5.615	.000	-.73	.13
Self-compassion	.49	.08	.283	5.637	.000	.49	.08
R=.459 ^a	R ² =.206						
F=46.46	p=.000 ^b						

Table 7 presents the findings regarding the multiple regression model in which loneliness and self-compassion were predictors of post-traumatic stress levels in adolescents. The findings suggested that self-compassion and loneliness significantly predicted adolescents' post-traumatic stress levels ($R=.459^a$; $R^2=.206$; $F=46.46$ $p=.000^b$; $p<.005$). Independent variables (loneliness and self-compassion) explained 20% of the variance in the dependent variable (post-traumatic stress level). Both loneliness and self-compassion significantly contributed to the model. Based on the standardized regression coefficients (β), the relative importance order of independent variables on the dependent variable is self-compassion ($\beta=.283$) and loneliness ($\beta=-.282$). Drawing on these findings, it can be said that self-compassion and loneliness are statistically significant predictors of post-traumatic stress levels in adolescents.

DISCUSSION, CONCLUSION, AND SUGGESTIONS

This study compared adolescents' post-traumatic stress levels by some demographic characteristics and investigated the associations between loneliness, self-compassion, and post-traumatic stress. This section discusses the findings based on the previous literature and provides suggestions.

Firstly, the findings suggested that females' post-traumatic stress levels were higher than males. Previous research suggested inconsistent findings. While some studies demonstrated that post-traumatic stress levels in females were statistically significantly higher than in males (Lehavot et al., 2018; Ashraf et al., 2019; Xue et al., 2015; Baştuğ & Aslantaş, 2021; Kilpatrick et al., 2000; Ünver & Karakaya, 2019; Trickey et al., 2012; Karalalı, 2021); some other found no significant difference between females' and males' post-traumatic stress levels (Bulut, 2009; Liv et al., 2016; Kar et al., 2006). Olf (2017) associated this difference in PTSD by gender with biological and psychosocial factors. The author suggested that females' post-traumatic stress levels are higher because their

oxytocin levels are higher, and females face more high-impact traumas (e.g., sexual trauma) than males during their lifetime. On the other hand, Gavranidou and Rosner (2003) stressed that females' coping strategies with stress differ from males' and that females use more emotion-focused coping strategies, which are more associated with depression, anxiety, and panic leading to more post-traumatic stress symptoms. From a cultural perspective, because of the social roles and expectations attributed to them, males have to struggle more and suppress their emotions, while females are more sensitive and emotional, which might create a difference in their post-traumatic stress levels (Ediz & Gülbahçe, 2019).

Secondly, this study investigated the effect of seeking psychological assistance on adolescents' post-traumatic stress levels. The findings suggested that adolescents who did not seek psychological assistance had a higher level of post-traumatic stress than those who did. However, to our best knowledge, no previous research has investigated the role of seeking psychological assistance on post-traumatic stress levels. Children and adolescents exposed to traumatic experiences and have more post-traumatic stress symptoms have psychological needs such as being supported, listened to, and understood to cope with these traumatic events (Zara, 2011). How the individual perceives, and the perceived severity of the problem arouses assistance-seeking behavior (Yelpaze, 2016). If the individual had sought assistance before and received assistance, this would positively contribute to psychological assistance-seeking behavior (Meydan & Lüleci, 2013). Drawing on these, the fact that individuals who sought psychological assistance had higher levels of post-traumatic stress can be attributed to the perceived severity of stress, having more symptoms of post-traumatic stress, noticing that something goes wrong, and having difficulty coping with stress. It can also be concluded that such a challenging situation might lead them to seek psychological assistance.

Thirdly, the study investigated whether exposure to or witnessing trauma created a statistically significant difference in adolescents' post-traumatic stress levels. The findings suggested that adolescents who had direct exposure to trauma had statistically significantly higher levels of post-traumatic stress than those who witnessed trauma. However, previous research showed that exposure to and witnessing trauma similarly affected post-traumatic reactions. For example, Erden and Gürdil (2009) found that those directly involved in war situations and witnessed them had similar severe stress reactions. They also pointed out that even if they are not directly involved in the war, individuals who witness war on broadcasts like TV show post-traumatic stress reactions. Another study by Dürü (2006) revealed that traumatic reactions were observed not only in those who directly experienced it but also in those who witnessed the event. Baştuğ and Arslantaş (2021), on the other hand, stated that the type and proximity of the event were also influential on trauma. The studies conducted on the victims of war and terrorism suggested that physical harm and the severity of physical harm are also significant in terms of post-traumatic stress (Abenheim et al., 1992; Verger et al., 2004). Drawing on these, it can be concluded that exposure to or witnessing trauma did not create a statistically significant difference in post-traumatic stress. Some factors lead to higher post-traumatic stress levels in individuals exposed to trauma than those who witnessed it. The nature and severity of the traumatic event and the perception of a higher physical or psychological threat risk originating from traumatic events are among these factors.

This study also dealt with self-compassion and loneliness, which were anticipated to be associated with adolescent post-traumatic stress. Additionally, the study aimed to determine the predictive strength of self-compassion and loneliness in post-traumatic stress. It concluded that higher levels of post-traumatic stress indicate lower self-compassion and higher loneliness in adolescents. On the other hand, self-compassion and loneliness explained 20% of the variance in post-traumatic stress. These findings are consistent with the previous literature. A thorough literature review yielded very few international and no national studies (in Türkiye) investigating the association between post-traumatic stress disorder and adolescent self-compassion. A study on adults in Türkiye by Tekcan (2018) revealed a negative relationship between post-traumatic stress and self-compassion. Gökmen and Deniz (2020) examined the relationship between self-insight and post-traumatic growth, which is expected to emerge following a trauma. They found that lower self-insight scores indicate lower post-traumatic growth. On the other hand, international research on adults suggested that higher levels of

self-compassion might result in lower post-traumatic stress levels (Hoffart et al., 2015; Leary et al., 2007; Maheux & Price, 2016; Tomson & Waltz, 2008). An experimental study conducted by Bulth et al. (2016) on adolescents aged 13-18 revealed that self-compassion had a protective effect against stress. Liu, Wang, and Wu (2020, 2021) concluded that self-compassion had a mediating role in post-traumatic stress and reduced post-traumatic stress symptoms. Lastly, Barlow, Turow, and Gerhart (2017) examined the associations between students' post-traumatic stress levels, childhood traumas, and self-compassion, showing that self-compassion mediated post-traumatic stress levels.

Although we could not reach a study conducted in Türkiye investigating the association between post-traumatic stress and loneliness, some studies examined the association between factors defined as post-traumatic stress symptoms and loneliness. For instance, Şahin et al. (2020) studied the relationship between the traumatic experiences of refugee university students and depression, loneliness, anxiety, post-traumatic growth, and pain. This study concluded that the excessiveness of traumatic experiences was positively related to loneliness and post-traumatic growth was negatively related to loneliness. In another study, it was reported that individuals with childhood trauma experienced more loneliness than those who did not have a sexual abuse experience (Shevlin et al., 2014). Some other studies suggested that sexual traumas led to experiencing more intense loneliness (Başoğlu, 2019; Gibson & Hartshorne, 1996). Çivitçi et al. (2009) and Akyol (2013) found that adolescents whose parents got divorced, which can be regarded as a traumatic experience, had a higher loneliness level. Güler Yılmaz (2012) revealed a positive association between shyness and loneliness. Adolescents, who tend towards violence, experience more loneliness (Haskan- Avcı & Yıldırım, 2014). Cauberghe et al. (2021) investigated how adolescents aged 13-19 used social media to relieve their loneliness and anxiety during the COVID-19 pandemic and found that loneliness had an adverse impact on happiness, and they actively used social media to cope with negative emotions. Drawing on these findings, it can be concluded that loneliness is not an antecedent but an outcome of traumatic experiences. Additionally, particularly for adolescents, post-traumatic symptoms such as distrust in the world and people, the feeling that they are the only person who experienced the trauma considering the type of the event, and the perception that it is guilt and shame might be influential on loneliness.

Lastly, another factor associated with adolescents' post-traumatic stress levels is self-compassion. Previous research showed that higher levels of self-compassion indicated lower PTSD, and self-compassion development programs or self-compassion-based psychotherapies would positively contribute to protection against PTSD (Valdez & Lilly, 2016; Karaoğlu & Erzi, 2019; Tomson & Waltz, 2008; Leary, 2007; Hoffart et al., 2015; Maheux & Price 2016; Bulth, 2016; LiuWang & Wu, 2020; LiuWang & Wu, 2021). Based on the findings in the literature and this study, we can conclude that self-compassion reduces post-traumatic stress because it facilitates accepting the pain, being aware of the fact that pain is a common phenomenon, approaching oneself with kindness in painful experiences which helps individuals cope with the destructive effect of traumas.

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The Effect of 5E-FCM Practices on Achievement, Motivation, and Autonomous Learning and Students' Opinions

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Abstract

This study aimed to determine the effect of 5E-Based Flipped Classroom Model (5E-FCM) applications on students' achievement, motivation, and autonomous learning in teaching 6th-grade multiplication with fractions and to determine students' opinions about the applications. The study was based on the embedded design, which is one of the mixed method designs. The study group consisted of 60 sixth-grade students using the convenience sampling method, one of the non-random sampling methods. As data collection tools, the Achievement Test, Motivation Scale, Autonomous Learning Scale, and semi-structured interview form were used. The data obtained were evaluated using t-tests for related and unrelated samples, and descriptive statistics for frequency, percentage, and mean values. As a result of the 5E-FCM teaching applications carried out in the study, it was determined that the post-test achievement mean scores and autonomous learning mean scores were significant in favor of the experimental group; the motivation levels of the experimental group students towards the course after the application were at a high level and increased significantly. Content analysis of students' opinions on 5E-FCM applications revealed that students expressed positive opinions that they had their own learning opportunities in the process and reinforced the subject.

Keywords: 5E-FCM, Achievement, Autonomous Learning, Motivation, Mathematics Teaching

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INTRODUCTION

In a globalizing world, developments and innovations in the field of education are important for the facilitation and quality of teaching. In this new era of change and development, there are certain skills and competencies expected of every individual. The International Society for Technology in Education (ISTE, 2016) has identified the educational technology standards that students should have in the 21st century. Correspondingly, in the Mathematics Curriculum (MoNE, 2018), "digital competence" and "learning to learn" are some of these competencies. "The "learning to learn" competence is expressed as the need for individuals to be responsible for their own learning and to have learner autonomy (Castle, 2008). During the pandemic period, the cultivation of students who take responsibility for their own learning and possess self-directedness has been a significant factor in the successful execution of educational practices that had to be conducted in synchronous, asynchronous, hybrid, and remote formats (Gao and Zhang, 2020; Göksel and Adıgüzel, 2022). Hence, to raise students with autonomous learning skills, it is thought that there is a need for teaching applications that are planned to be student-centered, give the student responsibility for his/her own learning, and allow the student to learn at his/her own pace in the learning process, apart from teacher-centered learning environments. The flipped classroom model (FCM), in which the out-of-class process is entirely student-controlled (Kara, 2016), is a model that has a positive impact on students' autonomous learning (Bursa, 2019).

FCM is a model that helps to create active learning environments, combines the advantages of face-to-face and online environments, and is a blended learning process based on the constructivist approach. (Bolat, 2016; Hwang, Lai & Wang, 2015; Kalafat, 2019).

Without being limited to time and classroom space, learning environments have been moved to any environment where there is access to the Internet (Ünsal, 2010). Blended learning is defined as combining the advantageous aspects of face-to-face learning in the classroom environment and web-based learning (Horton, 2000). The concept of blended learning is a combination of traditional face-to-face teaching applications in which computer-based technologies are the basis and the e-learning model in which the use of technological tools in learning environments is integrated (Osguthorpe & Graham, 2003). Bergman and Sams (2012) first introduced FCM, one of the blended learning models. FCM is a model in which the traditional teaching process is reversed, where students encounter the topic for the first time outside the class, and in-class activities are designed to reinforce the subject (Bergman and Sams, 2012). Traditional coursework aims to teach and learn the subject in the face-to-face in-class process, while the reinforcement of the subject is left to the out-of-class process as homework due to time constraints (Serçemeli, 2016). In contrast to the traditional course process, the students in FCM are asked to examine course materials such as videos and texts outside the face-to-face course, to start the process of knowledge discovery, and to acquire some basic knowledge before starting the face-to-face in-class process. At this point, the aim is to allocate more time for student-centered activities to reinforce the subject in the in-class process (Love, Hodge, Grandgenett, & Swift, 2014). Since the student manages the learning process in the extracurricular process, FCM is an important factor for students to take responsibility for their own learning. The student is at the center of learning in this model where the student takes responsibility for learning and thus learns to construct knowledge (Aziz, 2021). This enables students to acquire a learning culture (Hayırsever & Orhan, 2018). This means that the designed content is prepared in a way to includes interactive learning strategies and organized in a way that is suitable for the student (Bergman, Sams, 2012). The educator is of great importance for the best practice of this student-centered model. Teachers in this model organize the educational materials that students will use in the extracurricular process of FCM, prepare activities and contents that reinforce the subject by taking into account individual differences in the in-class process, and guide students throughout the process. FCM involves the integration of computer-based individual instruction outside the classroom with interactive group activities inside the classroom. In the out-of-class learning component, students access the basic knowledge of the subject from online learning resources prepared by the teacher and begin the process of exploring the subject (Bishop & Verleger, 2013). It is possible to realize the teaching contents of Bloom's taxonomy's recall and comprehension levels in the extracurricular process and to include interactive learning activities in

the in-class process (Bergman & Sams, 2009). In FCM, while some of the application steps of Bloom's Taxonomy, comprehension and recall steps take place in the pre-lesson process, the continuation of the application step, analyzing, evaluating, and creating steps take place in the in-lesson process (Brame, 2013; Cunningham, 2017; Lo, 2017; Westermann, 2014). The above-mentioned features of FCM show that the model is based on student-centered learning and constructivist understanding (Aydın & Demirer, 2016; Aziz, 2021; Hwang, Lai, & Wang, 2015). Within this scope, Lo (2017) and Schallert, Lavicza, and Vandervieren (2022) proposed a cyclical model that combines the 5E learning cycle model and FCM. The 5E-based flipped classroom model is a model that integrates the 5E learning cycle model and the flipped classroom model based on the constructivist approach. In this study, the 5E-based inverse face-to-face class model is used and abbreviated as 5E-FCM. In 5E-FCM, the activities and contents belonging to the introduction, exploration, and explanation steps of the 5E learning cycle model are carried out in the out-of-class process of the flipped classroom model, and the activities belonging to the deepening and evaluation steps are carried out in the in-class process of the flipped classroom model (Lo, 2017).

The pre-assessment of prior learning and readiness before the lesson, capturing the student's attention as the entry step of the 5E learning cycle and conducting activities for the exploration phase where the topic is discovered by the student, all occur during the face-to-face pre-class phase of the FCM. Online materials and course content enable the student to explore the subject matter before the face-to-face lesson or to start the discovery process. After this discovery process, students are expected to construct knowledge in their minds and produce informal knowledge. With the explanation step, the informal knowledge produced by the student is transformed into formal knowledge with the necessary explanations and corrections. Since the process of constructing knowledge takes place before the lesson, more time can be allocated to the work done to reinforce the subject and adapt it to new problem situations in the in-class process, contrary to the traditional understanding. Finally, the process and the work done are evaluated (Lo, 2017; Westermann, 2014).

Considering the studies on the flipped classroom model in mathematics education, it is seen that this model has positive effects on students' problem-solving skills (Lo & Hew, 2017), academic achievement (Şahin, Cavlazoğlu, & Zeytuncu, 2015; Wei, Cheng, Chen, Yang, Liu, Dong, Zhal, & Kinshuk, 2020; Yorgancı, 2020; Zengin, 2017), and class participation (Clark, 2015). At the same time, it has been stated that the flipped classroom model provides a more flexible learning environment than traditional learning approaches, which greatly contributes to the development of conceptual understanding in mathematics lessons (Wei et al., 2020).

The flipped classroom model provides a more flexible learning environment than traditional learning approaches due to the development of 21st-century skills and the learner's self-control in the teaching process (Özbay & Sarıca, 2019). In particular, autonomous learning, which is defined as a process in which a learner makes deliberate decisions to take responsibility for goal setting, planning, and taking action in a learning activity and in which the learner is the manager of learning, is an important factor for the success of the learning process (Karataş, 2013; Artsın, Koçdar, & Bozkurt, 2020). It is thought that the flipped classroom model will be effective in developing autonomous learning in terms of imposing more learning responsibility on the student due to its structure. Motivation for learning is an important factor that is effective in the timely fulfillment of students' learning responsibilities in the education and training process (Duman, 2019). It is important to organize teaching environments and practices in a way that is compatible with student characteristics to increase students' motivation (Çukurbaşı, 2016). The flipped classroom model is a frequently used teaching model in terms of its student-centered structure, increasing the active learning process in the classroom (Yılmaz, 2016), increasing student satisfaction (Jensen, Kummer, & Godoy, 2015; Tucker, 2012) and motivation (Alsancak Sırakaya, 2017; Kara, 2016; Yılmaz, 2017) (Yorgancı, 2020). In this context, this study aims to determine the effect of 5E-based flipped classroom model (5E-FCM) applications on students' achievement, motivation, autonomous learning, and students' opinions about 5E-FCM applications in teaching 6th-grade multiplication with fractions.

METHOD

Research Model

In the study, since it was aimed to reveal the effect of 5E-FCM applications on 6th-grade middle school students' achievement, motivation, and autonomous learning on multiplication of fractions, and to determine students' views on the process, the study was based on the embedded design, which is one of the mixed method designs (Creswell & Plano-Clark, 2007). In the embedded design, which combines the strengths of qualitative and quantitative designs, data obtained by an alternative method are also needed for the different types of data obtained by the researcher to support, generalize, or explain other data (Creswell & Plano-Clark, 2007). In this study, quantitative data were obtained in accordance with the experimental design with a pre-post-test control group. For the qualitative part of the study, the case study (Yıldırım & Şimşek, 2018), which studies a current phenomenon within a real-life framework and is used when multiple data sources and evidence are available, was utilized. Semi-structured interview technique, one of the qualitative data collection methods, was used to support quantitative data in the study

Study Group

This study was carried out with 60 sixth-grade students who were studying in a public school in the Kilimli district of Zonguldak province in 2022 and who were determined by convenient sampling methods from non-random sampling methods. A pilot study was also conducted with 30 students. 30 students were selected as the control group (47% female, 53% male) and 30 students were selected as the experimental group (40% female, 60% male). Fifth-grade mathematics report card grades of the selected students were examined. The groups were determined by selecting the sections randomly since all groups had similar mathematics course grade point averages and there was no significant difference between the fifth-grade mathematics course achievement grade point averages ($p < .05$).

Data Collection Tools

To examine the effect of 5E-FCM applications on students' achievement in multiplication of fractions, an achievement test consisting of 9 open-ended questions was developed by the researchers. An item pool was created by examining the relevant literature, the curriculum (MoNE, 2018), and the MoNE textbooks in line with the two learning outcomes and the five learning components of the learning outcomes. Five field education experts' opinions were taken to determine the content validity of the test in terms of the questions' suitability to the learning outcome, clarity, and conformity with Turkish spelling rules. Experts agreed that the questions in the pre-test form measured the targeted construct. Accordingly, the scale was finalized. In order to evaluate the comprehensibility of the questions in the achievement pretest scale, it was applied to five seventh-grade students selected from the pilot group. The scale consisting of 9 open-ended questions, which were found to be comprehensible, was finalized. An achievement test was applied to the experimental and control groups as a pre-post test before and after the experiment. To investigate the effect of 5E-FCM applications on students' autonomous learning, the Autonomous Learning Scale developed by Macaskill and Taylor (2010) and adapted into Turkish by Arslan and Yurdakul (2015) was used. The scale has two dimensions, "Independent learning" and "Study habits", and the Cronbach Alpha value was found to be 0.80 (Arslan & Yurdakul, 2015).

In the study, the Motivation Scale, which is a subscale of the "Motivational Strategies for Learning Scale" developed by Pintrich, Smith, Garcia, and McKeachie (1991) and adapted into Turkish by Karadeniz, Büyüköztürk, Akgün, Çakmak, and Demirel (2008), was used to investigate the effect of 5E-FCM applications on students' motivation. Sub-scales can be used separately depending on the purpose of the research (Karadeniz et al., 2008). Within this scope, the Motivation Scale used in the study is a 7-point Likert-type scale consisting of three main components and five sub-dimensions. The Motivation Scale consists of three main factors and a total of five sub-factors. The "value" main

component consists of "intrinsic goal orientation" and "task value" factors; the "expectancy" main component consists of "learning control belief" and "self-efficacy perception about learning and performance" factors; and the "affective" main component consists of "test anxiety" factor. The Cronbach Alpha internal consistency coefficient of the scale was found to be .79 (Karadeniz et al., 2008). The Cronbach's alpha values of the factors obtained show that the scale is reliable.

A semi-structured interview form was prepared and applied to obtain the opinions of the experimental group students regarding the 5E-FCM teaching applications. In order to develop the semi-structured interview form, a question pool of 7 items was created as a result of the literature review. Field education experts were consulted to examine the scope, appropriateness, and comprehensibility of the related items. The pre-test interview form was applied to two students in the experimental group to determine the duration and comprehensibility of the application, and the scale was finalized after it was determined that there was no problem with comprehensibility. During a semi-structured interview with 26 volunteer students, the students were asked questions about the difficulties they encountered in the course, the advantages and disadvantages of teaching, and their opinions about 5E-FCM.

Data Analysis

The scores of the participants from the scales were calculated to examine the effect of 5E-FCM applications on students' achievement, motivation, and autonomous learning on multiplication of fractions, and kurtosis and skewness values were examined to determine whether the scores were normally distributed (Tabachnick & Fidell, 2013). Table 1 shows the kurtosis and skewness values obtained from the Achievement Test, Motivation Scale, and Autonomous Learning Scale.

Table 1: Skewness and Kurtosis Values of Achievement Test, MS and ALS Scores

Scale	Group	Group	N	\bar{X}	s	Skewness	Kurtosis
Achievement Test	Experimental	Pre-Test	30	1.81	1.79	.753	-.382
		Post-Test	30	6.29	3.24	-.628	-.574
	Control	Pre-Test	30	2.30	1.32	-.255	-.602
		Post-test	30	3.12	2.48	.696	-.070
Motivation Scale	Experimental	Pre-Test	30	3.67	.24	-.218	-.467
		Post-Test	30	4.14	.22	-.175	-.126
	Control	Pre-Test	30	3.85	.55	-.074	-.182
		Post-Test	30	3.65	.50	.034	.717
Autonomous Learning Scale	Experimental	Pre-Test	30	4.36	.93	-.633	.046
		Post-Test	30	5.00	.67	-.763	-.058
	Control	Pre-Test	30	4.39	.37	-.154	-.472
		Post-Test	30	4.30	.32	.097	-.666

According to Tabachnick and Fidell (2013), it is assumed that the data fulfills the normal distribution condition if it is between -1.5 and +1.5. Accordingly, when the values in Table 1 were analyzed, it was determined that the kurtosis and skewness values of the experimental and control groups were between -1.5 and +1.5 in all measurements. In this context, the related and unrelated samples t-test was used for the comparison of normally distributed within-group data. A ranking measurement level can be defined as a ranking measurement level if it can be ranked in terms of having a certain characteristic. Accordingly, the mean ranges for the five-point Likert-type scales and sub-dimensions were accepted as low for 1-2.33, medium for 2.34-3.66, and high for 3.67-5; for the seven-point Likert-type scale, low for 1-2.99, medium for 3-5 and high for 5.01-7. Besides, Cohen's *d* values were calculated to determine the effect size to determine the practical significance of the results obtained in the study (Özsoy & Özsoy, 2013). Cohen's *d* values were interpreted as having a small effect between 0.20 and 0.50, a medium effect between 0.50 and 0.80, and a large effect above 0.80 (Kılıç, 2014). The content analysis method was used to analyze the opinions on 5E-FCM applications. The interviews with the students were recorded to analyze the data obtained from the interview form and then the opinions were coded. The opinions of two field experts were obtained after coding and organizing the themes. The code agreement between the two experts was found to be 90%. According

to this ratio, it was determined that the codes and themes were reliable, and direct quotations were also included.

Application Process

After the students were informed about the study, the scales were applied as a pre-post test. Student opinions were obtained through semi-structured interviews after the application. In the control group, following the pre-test applications, instruction was carried out by taking into account the instructions in the Mathematics Curriculum, using the textbook and the teaching activities in EBA (Education Information Network), while in the experimental group, teaching applications designed according to 5E-FCM were carried out. As the flipped classroom model is based on a constructivist foundation (Sağlam, 2016), instruction was designed based on the 5E learning cycle model. The experimental group's lessons were carried out with the lesson plan and teaching activities prepared based on the 5E-FCM model, the structure of which was revealed by Lo (2017). Since it is important to integrate technology into the process while designing instruction for the flipped classroom model, Nearpod was used as the classroom management system and Padlet, Google Sheets, Geogebra, Powtoon, and Zoom web 2.0 tools were used for other applications and activities.

Nearpod classroom management system was used for students to access the course content before the face-to-face class and students were enabled to interact with this Web 2.0 tool. The digital content of the course content created using the Nearpod classroom management system, dynamic geometry software, and web 2.0 tools is presented in Figure 1.

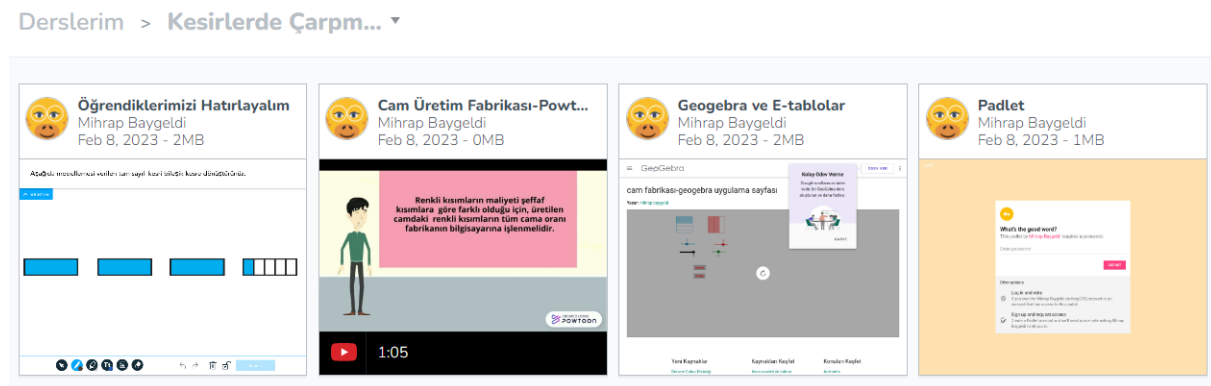


Fig. 1: Nearpod 5E-FCM course process

Figure 1 shows the "Let's Remember What We Learned" activity prepared in the Nearpod classroom management system in the 5E-FCM process to determine whether students are missing prerequisite knowledge, the problem situation named "Glass Production Factory" presented in the introduction step of the 5E learning cycle and created as a digital story, the Geogebra worksheet and guided discovery worksheet used in the exploration step, and the visual of the Padlet page used in the evaluation step of the 5E learning cycle.

With the aim of helping students to establish a relationship between daily life situations and the teaching process, the problem situation presented at the beginning of the teaching process was decided to be transferred to the students using the Powtoon digital story tool. In the teaching applications, teaching activities in which the student is involved in the discovery process were included in accordance with the structure of 5E-FCM and constructivist basis. After the problem situation named Glass Production Factory presented in the introduction step of the 5E learning cycle, Geogebra dynamic geometry software and the accompanying guided discovery worksheet were presented to the students to support the students' discovery process in the discovery step. As students were in the pre-lesson period of the flipped classroom model, the Zoom Web 2.0 tool was utilized in this process in order to keep in touch with peers and to continue teaching with both individual and group work. The students, who accessed basic information about the subject and explored the

theoretical part of the subject with the teaching applications carried out before the face-to-face lesson, completed the explanation step of the 5E learning cycle by accessing formal knowledge in the face-to-face environment. The deepening step being in the face-to-face part of the lesson and the theoretical knowledge being comprehended in the pre-lesson process an important factor in giving the necessary time to the teacher and students to reinforce the subject (Burelle-McGivney, Xue; 2013). At this stage of the course, teaching applications prepared using web 2.0 tools were used to reinforce the subject and transfer the learned knowledge to new problem situations. The evaluation section, which is the last step of the 5E learning cycle, was carried out with activities planned to continue both in the face-to-face environment in the classroom and outside the classroom. In the evaluation step, which is important in making the evaluation and ensuring continuity (Öztürk, 2013), homework and activities prepared in accordance with the constructivist approach were presented. The students were asked to construct 3 different problems as a formative assessment tool and this work was organized as a virtual board in the Padlet application. With this virtual board where students can share their problems with their friends, the interaction between students is also increased.

RESULTS

In line with the purpose of the study, a t-test for related samples was used to examine the significance of the difference between the mean achievement test scores of the experimental group in which 5E-FCM was applied and the control group in which 5E-FCM was not applied. The results obtained are given in Table 2.

Table 2: t-test results for the mean pre-post test achievement scores of the students in the experimental and control groups

Group	N	Test	\bar{X}	s	\bar{X} difference	Sd	t	p
Experimental	30	Pre-test	1.81	1.79	4.48	29	7.83	.000*
		Post-test	6.29	3.24				
Control	30	Pre-test	2.30	1.32	1.02	29	2.04	.050*
		Post-test	3.32	2.48				

*(p<.05)

When Table 2 was examined, it was determined that the mean pre-test achievement score of the students in the experimental group was $\bar{X} = 1.81$ points and the mean post-test achievement score was $\bar{X} = 6.29$ points. It was found that there was a difference of 4.48 points between the experimental group achievement test averages between the pre-post test scores in favor of the post-test within the group, and the t-value was found to be significant in favor of the post-test according to the t-test result for related samples [$t_{(29)} = -7.83, p < .05$]. This result shows that 5E-FCM teaching applications applied to the experimental group were effective in increasing achievement in favor of the post-test. For the control group, the mean pre-test achievement score was $\bar{X} = 2.30$ points, the mean post-test achievement score was $\bar{X} = 3.32$, and there was a difference of 1.02 points between the pre-post-test mean scores in favor of the post-test. The t-test result showed that the t-value was borderline significant in favor of the post-test [$t_{(29)} = -2.04, p = .05$].

Unrelated samples t-test was used to compare the significance of the difference between the mean post-test achievement scores of the experimental and control groups. It was determined that there was a difference of 3.17 points between the experimental and control group achievement post-test mean scores in favor of the experimental group; as a result of the t-test, there was a significant difference between the post-test achievement mean scores in favor of the experimental group [$t_{(58)} = 4.246, p < .05$]. This result reveals that 5E-FCM applications are more effective in increasing achievement than the control group.

To determine the effect of 5E-FCM applications on achievement, the effect size value calculated was $\eta^2 = 0.23$ and Cohen's $d = .54$. Therefore, it can be said that 23% of the variance of the achievement scores emerged due to 5E-FCM. Furthermore, the difference between the mean scores of the achievement scale is .54 standard deviation. The calculated effect size ($\eta^2 = 0.23, d = .54$) shows that

5E-FCM practices have a medium effect size for the difference between the averages (Kılıç, 2014; Sullivan & Feinn, 2012).

In the study, secondly, a t-test for related samples was applied to examine the significance of the difference between the pre-post test mean scores of the Motivation Scale (MS) of the experimental and control groups. The obtained t-test results are given in Table 3.

Table 3: t-test results for the mean pre-post test Motivation Scale scores of the students in the experimental and control groups

Group	N	Test	\bar{X}	s	Sd	t	p
Experimental	30	Pre-test	4.36	.93	29	7.05	.000*
		Post-test	5.00	.67			
Control	30	Pre-test	4.39	.37	29	2.31	.028*
		Post-test	4.30	.32			

(*p<.05)

Table 3 shows that there was a difference of 0.09 points in favor of the pre-test between the pre-test mean score (\bar{X} =4.39) and the post-test mean score (\bar{X} =4.30) in the control group. According to the results of the related samples t-test conducted to examine the significance of the difference between the pre-post test MS mean scores of the students in the control group, a significant difference was observed in favor of the pre-test in the motivation of the control group students towards the course. This result shows that there is a decrease in the motivation of the control group students towards the lesson as a result of the teaching made in accordance with the current MoNE program within the framework of the multiplication process in fractions. There was a difference of 0.64 points between the pre-test mean score of the Motivation Scale for the experimental group (\bar{X} =4.36) and the post-test mean score (\bar{X} =5.00). The t-test result for the significance of the obtained difference showed that there was a significant difference in the mean motivation scores in favor of the post-test [$t(29)=7.05, p<.05$]. Hence, experimental group students' 5E-FCM teaching applications were found to be effective in increasing the motivation level in favor of the post-test. An unrelated samples t-test was applied to compare the post-test MS scores of the experimental and control groups after the teaching applications. When the mean MS scores of the experimental and control groups were examined, it was determined that there was a significant difference between the mean post-test motivation scores in favor of the experimental group according to the t-test result for unrelated samples, which showed a difference of 0.70 points in favor of the experimental group [$t(58)=5.191, p<.05$].

To determine the extent of the effect of 5E-FCM applications on motivation, the eta-square (η^2) and Cohen's d values, which are effect sizes, were analyzed. The effect size value was calculated as $\eta^2=0.32$ and Cohen's $d=.67$. Therefore, it can be said that 32% of the variance of the achievement scores emerged due to 5E-FCM. Furthermore, the difference between the mean scores of the motivation scale is .67 standard deviation. The calculated effect size ($\eta^2=0.32, d=.61$) shows that 5E-FCM practices have a medium effect size for the difference between the averages (Büyüköztürk, 2020; Kılıç, 2014; Sullivan & Feinn, 2012). Table 4 shows the results of the post-test scores of the Motivation Scale for the experimental and control groups and the averages of the sub-dimensions of the scale.

Table 4: Descriptive statistics of the Motivation Scale and its sub-factors of the experimental and control group

Main Components	Factors	f		Minimum		Maximum		Mean (\bar{X})		Standard Deviation (s)	
		Experimental	Control	Experimental	Control	Experimental	Control	Experimental	Control	Experimental	Control
Value	Intrinsic goal orientation	30	30	3.25	3.50	6.50	6.00	5.29	4.56	.853	.817
	Task value	30	30	4.00	3.50	6.75	5.75	5.67	4.64	.788	.596
Expectation	Belief in learning control	30	30	3.20	3.40	6.40	5.60	5.32	4.59	.934	.685
	Perception of self-efficacy related to learning and performance	30	30	3.00	3.00	6.50	6.50	5.31	4.73	.942	.989
Affective	Exam anxiety	30	30	1.20	1.60	5.40	4.80	3.81	3.34	1.02	.854
Motivation Total		30	30	3.50	3.65	5.90	4.90	5.00	4.30	.674	.321

Considering the averages presented in Table 4, the control group was found to have a moderate level of motivation according to the scores of intrinsic goal orientation, task value, learning control belief, self-efficacy perception about learning and performance, test anxiety sub-factor, and the overall average of the scale. Considering the mean scores of the experimental group, the scores of intrinsic goal orientation, task value, learning control belief, and self-efficacy perception related to learning and performance showed that the group had a high level of motivation, while the scores of test anxiety and the general average of the scale showed that the group had a high level of motivation. The difference between the mean motivation scores of the experimental and control groups and the difference in the motivation levels of the students depending on the effect size value shows that the 5E-FCM teaching applications applied within the scope of multiplication of fractions in the experimental group were effective in increasing the motivation towards the course compared to the control group.

For the third problem of the study, a paired samples t-test was conducted to examine the significance of the difference between the pre-post test mean scores of the Autonomous Learning Scale (ALS) of the experimental and control groups. The obtained t-test results are given in Table 5.

Table 5: t-test results for the mean pre-post test Autonomous Learning Scale scores of the students in the experimental and control

Group	N	Test	\bar{X}	s	Sd	t	p
Experimental	30	Pre-test	3.67	.25	29	7.12	.000*
		Post-test	4.14	.22			
Control	30	Pre-test	3.85	.55	29	1.65	.108
		Post-test	3.65	.50			

(*p<.05)

Table 6 shows that the mean pre-test and post-test scores of the control group were \bar{X} =3.85 and \bar{X} =3.65 points, respectively. Examining the mean scores of the control group ALS, it was determined that there was a difference of 0.20 points between the pre-post test mean scores in favor of the pre-test and that the mean scores decreased after the application. According to the t-test result, it was determined that there was no significant difference between the pre-post test AL score averages of the control group students [t(29)=1.65, p>.05].

For the experimental group, it is seen that there is a difference of 0.47 points in favor of the post-test between the pre-test \bar{X} =3.67 and post-test \bar{X} =4.14 mean scores in the pretest and post-test, respectively. According to the results of the t-test, students' autonomous learning mean scores showed

a significant difference in favor of the post-test [$t(29)=7.12, p<.05$]. Based on this result, it shows that the 5E-FCM applications applied to the experimental group students were effective in increasing the level of autonomous learning in favor of the post-test. After the teaching applications, the post-test SCL scores of the experimental and control groups were compared by t-test for unrelated samples, and it was observed that there was a significant difference between the mean post-test motivation scores in favor of the experimental group [$t(58)= 4.791, p<.05$].

The effect size value of 5E-FCM applications on autonomous learning was calculated as $\eta^2=0.28$ and Cohen's $d=.62$. Therefore, it can be said that 28% of the variance of the achievement scores emerged due to 5E-FCM. Furthermore, the difference between the mean scores of the autonomous learning scale is .62 standard deviation. The calculated effect size ($\eta^2=0.28, d=.62$) shows that 5E-FCM practices have a medium effect size for the difference between the averages (Kılıç, 2014; Sullivan & Feinn, 2012). Table 6 shows the results of the post-test scores of the Autonomous Learning Scale and the averages of the sub-dimensions of the scale.

Table 6: Descriptive statistics of the Autonomous Learning Scale and its sub-factors of the experimental and control group students

Factors	f		Minimum		Maximum		Mean (\bar{X})		Standard Deviation (s)	
	Experimental	Control	Experimental	Control	Experimental	Control	Experimental	Control	Experimental	Control
Independent Learning	30	30	3.57	2.43	4.71	5.00	4.16	3.67	.282	.550
Study Habits	30	30	3.80	2.20	4.60	5.00	4.11	3.64	.255	.539
Autonomous Learning Total	30	30	3.67	2.67	4.58	5.00	4.14	3.65	.224	.505

Table 8 shows that the control group had a moderate level of autonomous learning according to the scores belonging to the independent learning, study habits sub-factor, and the general average of the scale. The experimental group was found to have a high level of autonomous learning according to the scores belonging to the independent learning, study habits sub-factor, and the overall average of the scale. In line with the results obtained, the 5E-FCM teaching applications were effective in increasing the autonomous learning levels compared to the control group.

For the fourth problem of the research, the opinions of the students in the experimental group about the 5E-FCM applications obtained from the semi-structured interview form were subjected to content analysis. Figure 2 shows the categories and codes obtained from the content analysis.

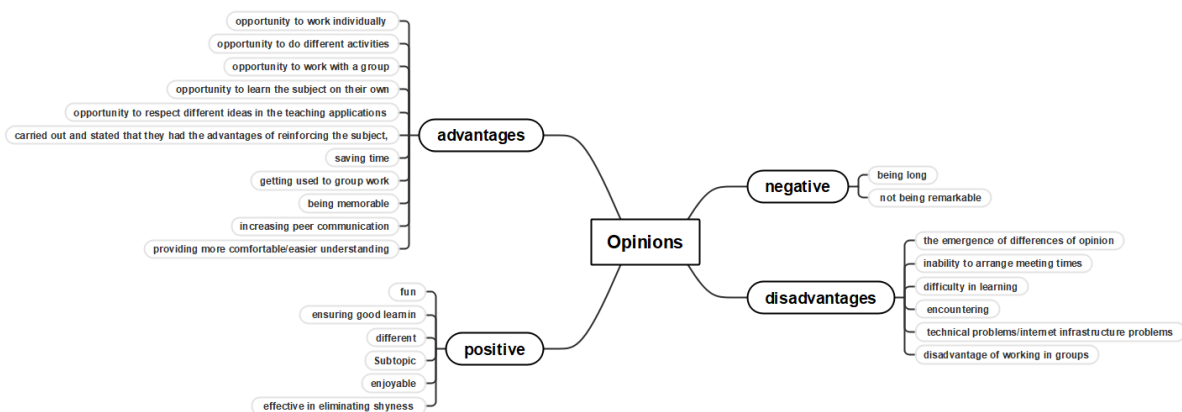


Fig. 2: Codes and themes of student opinions.

Figure 2 shows that 25 codes and 230 opinions were identified under 4 categories according to the results of the content analysis. The analysis showed that the students found the 5E-FCM applications enjoyable, different, and fun, that these studies were effective in eliminating shyness and ensuring good learning, that the mathematics course was more effective in this way, and that they thought it should continue. Accordingly, some of the student opinions in the positive theme are as follows:

S3: Fractions became more enjoyable and it made me feel less ashamed of my friends.

S7: It was different and effective from the math lessons we normally teach.

S11: In this way, it helps to learn the subject better.

S16: I would like math lessons to continue in this way.

Students saw it as an opportunity to find the to work individually, to do different activities, to work with a group, to learn the subject on their own, to respect different ideas in the teaching applications carried out and stated that they had the advantages of reinforcing the subject, saving time, getting used to group work, being memorable, increasing peer communication, and providing more comfortable/easier understanding. Sample student opinions belonging to the advantage category are as follows:

T23: It provided the opportunity to do group work and learn the subject on their own.

S2: With this method, we reinforce the subject while learning it. This allows us to save time.

S19: We respected each other's opinions with group unity and had a lot of fun.

S20: In my opinion, math lessons should be spent with different activities (models, presentations, small experiments, etc.) instead of tests.

Besides, a few of the students had negative opinions about 5E-FCM applications in terms of the process being long and not being remarkable. Some opinions that students see as disadvantages were also identified. Group work is seen as an advantage for some students and a disadvantage for others. However, the emergence of differences of opinion, disadvantage of working in groups, inability to arrange meeting times, difficulty in learning, and encountering technical problems/internet infrastructure problems are the opinions collected under the disadvantage theme. Some of these opinions are as follows:

S25: In online courses, sometimes the internet connection may be interrupted and there is no sound or image.

S14: It is a bit more difficult to learn with the flipped classroom model, but this way I can remember more about the subject.

S7: Since we were working in a group, there were differences of opinion, which was a disadvantage for us.

DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

In this study, it was examined the effect of 5E-FCM applications on 6th-grade students' achievement, motivation for learning, and autonomous learning in teaching multiplication of fractions. According to the results obtained from the study, it was concluded that the mean post-test achievement scores of the experimental and control groups were significant in favor of the experimental group and that 5E-FCM applications had a moderate effect on increasing student achievement. This result is similar to the studies conducted by Arslan (2021) and Gökdaş and Gürsoy (2018). Arslan (2021)

concluded that the flipped classroom model increased students' achievement in teaching the 5th grade fractions and operations in fractions units. Aşıksoy and Ozdamli (2017) concluded in their study that the flipped classroom model based on the 5E learning cycle model has a significantly high effect on increasing student achievement in physics courses. In similar studies, it was stated that the flipped classroom model was effective in increasing student achievement (Alkaya Karagöl, 2020; Alper & Öztürk, 2019; Alsancak Sırakaya, 2015; Bursa, 2019; Şahin, Cavlazoğlu, & Zeytuncu, 2015; Zengin, 2015; Wei, Cheng, Chen, Yang, Liu, Dong, Zhal, & Kinshuk, 2020).

In the analysis made in terms of the post-test MS mean scores of the experimental and control groups, a significant difference was found in favor of the experimental group and it was determined that the experimental group students had a high level of motivation after the application. The results showed that 5E-FCM applications had a moderate effect on increasing students' motivation towards the course. Similarly, in the study conducted by Yorgancı (2020), it was concluded that teaching prepared with activities based on the flipped classroom model to increase student performance in mathematics lessons increased students' motivation. Matsumoto (2016) also found that the flipped classroom model based on gamification was effective in increasing students' motivation. A review of the literature shows that the flipped classroom model is effective in increasing student motivation in many studies (Çukurbaşı, 2016; Girgin & Cabaroğlu, 2021; Gökdaş & Gürsoy, 2018); Lai & Foon, 2019; Kömeç, 2018). Unlike the findings obtained, Duman (2019) stated that the application of the flipped classroom model based on activity-based learning did not cause an effective change in students' motivation.

The mean scores of the experimental group pre-post-test ALS scores were found to be significant in favor of the post-test and it was determined that the experimental group students had a high level of autonomous learning according to the post-test mean scores. It was concluded that 5E-FCM teaching applications had a moderate effect on increasing the level of autonomous learning. Other similar studies show that the flipped classroom model has a positive effect on students' autonomous learning (Alper & Öztürk, 2019; Darıyemez, 2020; Dinçer 2020; Han, 2015; Öztürk, 2016; Shehata, 2019). Differently, Taşçi (2021) concluded in his study that EBA-supported flipped classroom practice did not create a significant difference between autonomous learning skills.

In the study, students had positive opinions about 5E-FCM applications, and it was concluded that the applications were different from other courses, were fun and attracted students' attention, and offered advantages such as increasing peer communication, respecting different ideas, and learning how to work as a team. Moreover, it is among the opinions obtained that it has advantages such as saving time, getting used to group work, and increasing the memorability of the subject. However, it was also stated in the student opinions that there were disadvantages such as sometimes encountering technical problems in the use of technology-based contents of 5E-FCM and not being able to manage differences of opinion due to the fact that students were left to themselves in some parts of the teaching process. According to Çay (2020), students' opinions on flipped classroom model applications were examined and it was determined that students experienced a more interactive teaching process at their own learning pace and that they saved time and participated more in the classroom.

In studies based on the flipped classroom model, group work is used as a dominant learning strategy (Koh, 2019). Strengthening the bonds between students, and increasing satisfaction and motivation are among the reasons for using cooperative learning strategies in flipped classrooms (Umar & Ko, 2022). Nevertheless, students' transition from social to academic relationships is not a natural process and there is a need for students' group work processes to be shaped within a constructivist framework (McCollum, Fleming, Plotnikoff, & Skagen, 2017). Within this scope, the effects of collaborative learning strategies on learning and motivation based on the flipped classroom model are recommended to be investigated in future studies. It is among the data obtained from the study that the flipped classroom model increases student motivation. Studies have also shown that materials presented to students and well-defined tasks motivate students (Campos-Mesa, Castañeda-Vázquez, DelCastillo-Andrés and González-Campos, 2022). Within this scope, it is possible to

examine the effects of flipped classroom model applications using course materials supported by Web 2.0 tools on motivation. This study was limited to the 6th grade "Operations with Fractions" sub-learning area. The flipped classroom model can be applied in different learning areas. It is also recommended to conduct new studies by taking into account different age and gender groups.

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The Effects of Electronic Monitoring in the University Workplace: Bangladeshi Academics' Perceptions of Work Performance Monitoring

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Abstract

Technology applications play an important role in promoting progressive education in the higher education sector, where student-centered and holistic development approaches are essential. In this context, electronic monitoring can meet the needs of education authorities, institutions, and university administrators while also aiding academics and students. This study explores the consequences of electronic monitoring from the perspective of Bangladeshi academics working in private universities. It investigates the extent to which electronic monitoring is utilized to monitor job performance and academics' perceptions of using the application. Guided by the panopticon model, we designed a qualitative research approach and employed case study and interview methods to obtain data. Two private universities were involved in data collection. The results revealed that most academics saw the value of electronic monitoring as an alternative to traditional means of surveillance. Furthermore, academics' positive attitudes toward such practice were influenced by their level of awareness being electronically monitored using technological means with features that could provide them with control over work performance and the available support mechanisms. Some highlighted benefits are safety, productivity, cost-effectiveness, potentially unlawful or unethical conduct monitoring, and workplace accountability and obligation. Despite little concern about privacy issues regarding the widespread use of electronic monitoring, most academics opposed using CCTV cameras in classroom teaching. The study revealed that academics' thoughts on electronic monitoring, which are linked to specific government directives, can be heavily influenced by external forces, and how flexible the monitoring environment can play a role in minimizing resistance and improving policy adherence. This study has important practical implications for education authorities, academic administrators, and educators.

Keywords: Electronic Monitoring, Academics, Panopticon, Bangladesh, Education

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INTRODUCTION

Since the COVID-19 pandemic was declared in 2020, there has been a dramatic increase in global adoption trends for surveillance and monitoring technologies. When millions globally must work remotely, organizations have extensively employed technologies to monitor and track employees and their work activities electronically. Like other economic sectors, the pandemic severely affected higher education. Since then, surveillance and monitoring practices have intensified in universities worldwide (Beetham et al., 2022). These practices using technological devices, systems and platforms contribute to the increasing datafication activities at the workplace (Ball, 2021) and around academic practices (Wintrup, 2017; Beetham et al., 2022; Gourlay, 2022). “Without intervention, the overall impact of these practices in higher education will mirror those in the wider society: the rise of cultures of policing and carceral technologies, attacks on the dignity of human beings, and the algorithmic embedding and enhancement of biases that reinforce racism, sexism, and structural inequality” (Beetham et al., 2022: p.18). Efforts for progressive education that stresses crucial features involving student-centered and holistic development approaches in academic practices may be hampered if surveillance and monitoring practices and their impact are not clearly understood.

Since the 1980s, the dominant neoliberalism ideology has shaped higher education policy in many countries (Saunders, 2010; Kabir, 2013; Kenny, 2017; Lee et al., 2017; St John, 2023). Numerous business ecosystem pressures and the education policies molded by this ideology rapidly transform higher education. This doctrine gives birth to administrative practices that foster a culture of performativity as competition for a university's funding intensifies (Kenny, 2017). Performativity culture in education embeds quantitative and qualitative performance measurements, indicators, audit reporting, statistics for evaluation and comparison, and quality assurance practices (Jauhiainen et al., 2015; Tandilashvili & Tandilashvili, 2022). Information communication technologies (ICTs) and systems have been deployed to electronically monitor academic and non-academic personnel and students in various contexts and feed data and information to suit the needs of various levels of education authorities, institutions, and university administrators, including performance monitoring.

Electronic monitoring is defined as the use of electronic devices, systems, and technologies to automatically collect, store, analyze, report, and communicate data and information about employees and their activities, allowing an employer or authority to monitor and make judgments about employee work performance. The COVID-19 pandemic, according to Beetham et al. (2022), has hastened the use of this application for academic surveillance practices within the university setting. Furthermore, as the neoliberal view of university management gains traction in the minds of academic leaders and education authorities, all dimensions of academic practices are increasingly being electronically monitored; additionally, digital footprints of important stakeholders in academic work processes - educators and students - are increasingly serving datafication activities of higher education, sometimes without them even realizing it (Gourlay, 2022).

While many of the consequences of electronic monitoring have been reported in the literature, McParland and Connolly (2020) discovered through a systematic review of the existing literature that workplace surveillance and monitoring in relation to the effects on employee performance and productivity is still an under-researched area. Experts have urged for greater research outside of the laboratory type of studies to understand the application's effects better as electronic monitoring permeates organizations exponentially and affects an increasing number of employees (Siegel, König & Lazar, 2022). In addition, this topic of inquiry is significantly underexplored from the perspective of developing countries. Hence, our research aims to fill these gaps.

This study explores the implications of electronic monitoring from the perspective of academics from a developing nation. It investigates the academics' perceptions of electronic monitoring at their universities. In addition, it determines whether it affects the work performance of academics. Therefore, we outline two research questions: (1) how widespread electronic monitoring is in their university; (2) how the academics view electronic monitoring to keep track of their performance at work. To answer these questions, we draw on the panopticon concept developed by

philosopher Michel Foucault and others from Jeremy Bentham's previous works. Much work in surveillance studies has used the panopticon model to analyze the increased capabilities of modern surveillance mechanisms, including ICTs that function as 'watchers' that are typically deployed by the state and business organizations to have more power over the 'watched', whomever the individuals target for the surveillance activities (Manokha, 2018). Panopticon effects are defined in this study as the extent to which employees assume control or are controlled by using workplace surveillance and monitoring instruments (Botan & Vorvoreanu, 2005), such as electronic monitoring. The effects are predicted to occur in the panopticon setup, i.e., when employees are aware of the monitoring activities and the technology in practice contains features that generate data and information for authorities, which are governed by certain policies and procedures, to use for employee monitoring.

Using Bangladeshi academics' context, our findings contribute to a better understanding of the consequences of electronic monitoring and have substantial practical implications for education authorities and university administrators. The findings of this study suggest that: (1) in higher education institutions, external influences can play a significant role in influencing academics' perceptions of electronic monitoring, sometimes more than internal influences; (2) academics' awareness that they are being monitored electronically and the accessible support mechanisms, particularly the level of ICT team proficiency and organizational managerial practices, can affect their trust and confidence in the technology; and (3) academics will have a favorable opinion of the use of electronic monitoring if the technology features are designed to provide them more control. Our research raises awareness about the importance of increasing efforts at all levels of authorities and university administrators to strike a balance between using electronic monitoring and ensuring the technology's ethical usage for surveillance and monitoring purposes.

The structure of this paper is as follows. The section that follows provides a summary of the selected literature. Following this, an explanation of how the qualitative research guided by the panopticon model was planned and executed to collect data is provided. The thematic Analysis (TA) technique was engaged to perform data analysis. The research outcomes are then presented and discussed further. This paper emphasizes the practical implications of the research in its conclusion.

LITERATURE REVIEW

Some Trends and Effects of Workplace Surveillance and Employee Monitoring

Workplace surveillance and employee monitoring practices are becoming more common around the world. ExpressVPN examined 2000 employers and 2000 employees in a hybrid work environment in 2021 and discovered that 78% of organizations utilize monitoring tools to monitor their employees (ExpressVPN, 2021). According to the report, 74% of employers felt a lack of control over their organization in a hybrid work environment; 69% were concerned about remote work because they could not supervise employees in person. Because most employers in the poll required in-person and electronic supervision before they could trust their employees to work, it is expected that the majority will continue to use technology for workplace surveillance and employee monitoring. ExpressVPN (2021) survey results also found that 59% of employees reported feeling stress and/or anxiety about the surveillance practices of their employer monitoring their online activity.

Ball (2021) identified four new advancements in workplace surveillance by examining 398 articles about using surveillance and monitoring technologies in the workplace. The first trend is using a greater range of technology for workplace surveillance that can go beyond performance management and into an employee's movement and location, as well as their behaviours, sentiments, and thoughts. Because of remote working, the second trend is an increased deployment of tools such as email and desktop monitoring, keystroke, and webcam surveillance throughout Europe, the United Kingdom, and the United States. The third trend identified by Ball (2021) is growing concern about the influence of surveillance and monitoring technologies on employees' well-being and social interactions. Finally, there are growing concerns regarding the platform's technological elements of employee surveillance that employ algorithms and their psychological effects on employees. Several organizations have

currently exploited and experimented with advanced technology and devices to generate detailed employee data that can link productivity, location, health, and mood, such as using wearable fitness devices, wearable location and conversation monitors, GPS tracking tools, Radio Frequency Identification (RFID) and implantable microchip devices, and people analytics software with algorithmic profiling (Swartz, 2021).

Siegel, König, and Lazar (2022) reviewed and described details from previous studies and their findings on electronic monitoring and its effects on employees, such as job satisfaction, perceived stress, privacy violation, performance, perceived autonomy, trust, social support, counterproductive work behavior (CWB), and citizenship behavior. They updated existing meta-analysis approaches and examined how further moderators influenced the effect of electronic monitoring on job satisfaction, stress, performance, and CWB while taking monitoring purpose, performance targets, study setting, kind of performance, and monitoring feedback into account. Based on the analysis of the laboratory types of study samples, they remarked that such studies appear to underestimate the relationship between monitoring and job satisfaction, stress, and performance due to the absence of a meaningful working context and the inability to investigate the dynamics of social relationships at work in depth.

Monitoring and Surveillance at the University Workplace

Academics' professional obligations in a university setting include more than just teaching, research, and administration. Many have expressed concern that such a broad range of responsibilities will increase academics' workload and negatively impact their productivity and performance, particularly in providing excellent teaching services, generating new knowledge through impactful research, and making significant societal contributions (Pace et al., 2019; Yang et al., 2021; Beatson et al., 2021).

Tandilashvili and Tandilashvili (2022) reported their findings on the experiences and perspectives of French academics of the performance-oriented culture formed to transform French higher education and how it impacts their academic identity. The study shed new light on academics dealing with value conflict and academic identity transition. They identified three major transitions in the academic profession: (1) the transition of university governance from a democratic approach to a more top-down structure with centralized power; (2) increased autonomy power with the implementation of new, output-oriented management practices that introduced new, market-oriented logic into the profession; and (3) academics perceived their profession as becoming more competitive and performance-driven as a result of these transitions.

Education authorities, university management, and academic administrators increasingly rely on various electronic surveillance platforms to monitor university personnel and students. In addition, universities are gradually building data infrastructures to capture students' life data, communications, and profiles to better match their educational goals (Jones et al., 2020). Many educational institutions are intensifying student datafication for big data applications and learning analytics, allowing for the creation of revelatory and analyzable data trails (Jones et al., 2020).

Wintrup (2017) researched learning analytics and highlighted reservations about its policy-level application for education surveillance and monitoring by various stakeholders. Learning analytics is simply the use of digital technologies to collect, measure, analyze, and report data about students as learners, as well as to assist educators in meeting students' needs within their learning environment in order to maximize engagement and learning outcomes (Wintrup, 2017; Khalil et al., 2023). It has gained popularity among educators and authorities to improve teaching and learning quality and increase student engagement. According to Wintrup (2017), learning analytics and its context of use for education quality surveillance and monitoring may have unanticipated repercussions. Influencing students' learning behavior to fit the parameters of academic surveillance practices, lowering their desire to study, and changing their learning engagement are among the potential risks (Wintrup, 2017). She highlighted Massive Open Online Courses (MOOCs) as an

example of how digital learning platforms for MOOCs are used by educators and policymakers for interventions and quality improvement.

Another notable change brought about by the COVID-19 pandemic is that educational institutions must now evaluate both the online learning environment and the face-to-face learning experience provided by attending physical classroom teaching. This transformation in higher education has piqued the interest of many stakeholders, not just researchers, concerned about potential challenges caused by insufficient physical and virtual T&L infrastructures. The well-being of educators and students is one source of worry. Recently published research by Sultana et al. (2022) reported that online educational experiences had caused tension and anxiety among Bangladeshi academics and students. Most academics in their study expressed anxiety about losing their employment. They linked these negative feelings to the university administration's constant surveillance and monitoring of them, particularly through various communication platforms (Sultana et al., 2022). Their study used a focus group approach and examined the well-being of Bangladeshi private university academics and students during the COVID-19 epidemic.

In their study on the readiness of Turkish educators for Society 5.0, Yaraş and Ozturk (2022) investigated the perceived effects on educators when advanced technology applications, especially those embedded with artificial intelligence (AI), will be substantially integrated into human social life and activities. Using semi-structured interviews with fifty potential Turkish educators, the study's findings disclosed a variety of perceived consequences for future educators in the Society 5.0 era. Positive implications discovered in the study included the possibility of flexible working and the savings of time and resources spent commuting to work. The reported negative effects include the inability to concentrate, decreased motivation, and merging work and home environments. They urged education leaders and administrators to be proactive and enhance their skills in preparation for the era. Several emerging ethical dilemmas and security challenges associated with large AI-embedded applications will necessitate a reevaluation of existing privacy and security safeguards for organizations and industry practices, including education (Taj & Zaman, 2022).

The Panopticon Model for Surveillance and Control

The Panopticon concept is a metaphor and thinking tool that was further expanded by Foucault in the 1970s, from the earlier works of Jeremy Bentham on prison building design in the 18th century. The basic principle of Bentham's prison building design was to establish a constant surveillance mechanism to create a self-regulating system where the prisoners, as the 'watched', could police themselves (Manokha, 2018). Two essential dimensions concerning past works introduced by Bentham and Foucault, which is self-restraint and self-discipline, were further explored by Manokha (2018) to raise arguments about the importance of being aware of any forms that modern surveillance mechanisms, particularly technologies, could be used as control and manipulation tool, and can have an impact on individual privacy and freedom.

In Jeremy Bentham's panopticon prison project, the three fundamental assumptions that applied are: "first, the omnipresence of the inspector, ensured by his total invisibility; second, universal visibility of objects of surveillance; and third, the assumption of constant observation by the watched" (Manokha, 2018, p. 222). From Bentham's point of view, the 'watcher' acquires the power to monitor prisoners, and to punish and discipline the disobedience and behaviour that violates the rules. The 'watched', i.e., the prisoners, on the other hand, acquire the power to exercise self-restraint and self-discipline under the belief that they are being constantly watched. Such a panopticon setting designed by Bentham permits observation of maximum numbers of prisoners using the fewest possible prison guards, ultimately optimizing the associated operating costs of managing a prison building (Manokha, 2018). In his subsequent works, Foucault proposed that the panopticon is a model of surveillance for various panopticon settings because it is not only limited to the physical structure but also serves as a metaphor for the ways power is exercised for control and discipline in the context of modern society surveillance (Manokha, 2018; Wood, 2007).

Furthermore, a panopticon system can exist in modern ways of deploying various electronic means of surveillance when employees act and do their work as if they are being continuously monitored (Botan & Vorvoreanu, 2005; Manokha, 2020). An ideal electronic panopticon setting is possible when the panopticon is designed to allow constant supervision to exist even when a supervisor is not physically present due to technologies that track, record, and analyze employees' work activities, operations, and movements (Manokha, 2020). Botan and Vorvoreanu (2005) utilized the 'electronic panopticon' concept to describe how modern surveillance technologies could be created as an extension of efforts to gain more power and control in the workplace. Technology's transformative capacity can produce a comprehensive electronic panopticon setting and enormous possibilities for employers to gain authority and exercise control over employees (Botan & Vorvoreanu, 2005; Manokha, 2020). Due to the perception of constant monitoring at the workplace, social, behavioral, and psychological implications associated with panopticon effects might be noticed in the electronic panopticon setting (Botan & Vorvoreanu, 2005; Manokha, 2020).

RESEARCH FRAMEWORK AND METHODOLOGIES

The Panopticon Model as A Conceptual Tool

The panopticon model is used as a conceptual tool to investigate the consequences of electronic monitoring at the university workplace. The four elements developed by Botan and Vorvoreanu (2005) are being applied in the study to determine the effects of electronic monitoring within an electronic panopticon configuration. According to Botan and Vorvoreanu (2005: p.133), these four elements must exist and interact in the workplace to have noticeable panopticon effects: (1) employee awareness of being watched; (2) surveillance capability of technology; (3) management policy; and (4) maturation. The first element, employee awareness of being monitored, must exist to observe panopticon effects. The second element concerning the panopticon potential of technology will be determined by the extent of its technological capabilities making employees visible, keeping the surveillant authority invisible, generating details data and records, and performing details analysis automatically. The third element is the management policy with surveillance and monitoring technology being integrated. The last element, maturation, defines the point at which workplace surveillance activities and processes related to the other elements have been integrated with management policy and are being implemented. According to Botan and Vorvoreanu (2005), the dynamic interplay between these four elements will have panopticon effects observable in an electronic panopticon context.

Qualitative Research Approaches

This study is a subset of a larger study in which case studies and interviews were employed as primary qualitative data collection methods. Additional information about the research methodology and approaches can be accessed in Mannan and Rohaya (2023, 2024). A case study is a detailed examination of a single entity, such as an organization, a group of people, or even a single person (Merriam & Tisdell, 2015). Multiple case studies allow researchers to investigate the phenomenon of interest both within and outside the real-life setting, allowing them to compare and overcome biases that may arise when using a single case study to draw meaningful research conclusions (Yin, 2003; Baxter & Jack, 2008). Purposive sampling was used in this study to evaluate universities that would be deemed case studies for the research and to recruit research participants. Purposive sampling is one of the non-probability sampling approaches that is highly suggested for efficiently recruiting research participants who can help to achieve the study's research objectives and questions (Showkat & Parveen, 2017). Furthermore, as Patton and Cochran (2002) highlighted, purposive sampling is an appropriate method in the case study selection process, allowing the utilization of the most readily available resources for qualitative research. Because of the COVID-19 pandemic's lockdown, this study used a series of online interviews with research subjects who agreed to engage in the study. In addition, secondary data was obtained from publicly available publications, websites, social media, prospectuses, brochures, annual reports, and university newspapers.

Data Collection Methods

Data collection for the research started from August 2020 until May 2021. Using purposive sampling, this study carefully evaluated a list of institutions in Bangladesh. Two private universities that fit the criteria of having been in operation for more than 15 years and being on the university rankings list in Bangladesh in 2019 were chosen. Official approval was obtained from these universities' top management for the research. Table 1 provides a brief profile about these institutions. The identifier PUA for Private University A and PUB for Private University B was assigned to maintain the anonymity and confidentiality of these universities.

Table 1. Brief Profile of Case Studies

Case Study	Year of Operation	Ranking in Bangladesh	Active Students	Academic Staff
Private University A (PUA)	>18 years	Listed in the top 20 in the ranking for private universities in 2019.	>3200	>150
Private University B (PUB)	> 26 years	Listed among the top 5 in the ranking for private universities in 2019.	>7500	>400

Source: UGC (2020) & Various Accessible Online Resources about PUA and PUB

PUA is a private university in the emerging university group founded in 2003 in Bangladesh under the Private University Act of 1992 and is now governed by the Private University Act of 2010. The university was founded by professionals who worked together through a nonprofit group. The university aspires to achieve a global reputation and become a high-quality education and research provider. The university had graduated over 9000 students by 2018.

PUB was founded in 1995 by a non-profit organization in Bangladesh, under the Private University Act of 1992, and is classified within the pioneer group of private universities. The vision of PUB is to pursue excellence in science, engineering, technology, and business through knowledge production and transfer to improve the quality of life in Bangladesh and abroad. Its mission is to produce high-quality graduates capable of significantly improving society and the nation.

Between March and April 2021, fourteen in-depth, semi-structured interviews were conducted. The longest interview lasts 54.41 minutes, while the shortest lasts 18.43 minutes. The interviews were all audio recorded and transcribed. Each participant is given a unique identification to maintain their confidentiality and anonymity. Table 2 provides some background information on the research participants.

Table 2. Brief Profiles about the Research Participants

	Total	Gender	Designation	Identifiers
PUA	8	5 males 3 females	4 academicians; 2 academicians cum management (Director); 2 non-academicians (Registrar & Head of IT Department)	<i>R1-PUA; R2-PUA; R3-PUA; R4-PUA; R5-PUA; R6-PUA; R7-PUA; R8-PUA</i>
PUB	6	3 males 3 females	5 academicians; 1 academician cum management (Director of ICT Centre)	<i>R1-PUB; R2-PUB; R3-PUB; R4-PUB; R5-PUB; R6-PUB</i>

Data Analysis and Interpretation Using Thematic Analysis

Thematic Analysis (TA) is a popular technique for analyzing qualitative data. TA is a systematic technique for identifying, analyzing, and interpreting patterns that emerge as themes or meaning from qualitative data (Braun & Clarke, 2006). The analysis method is adaptable and useful for dealing with the complexities and subtleties of qualitative research data (Braun & Clarke, 2006). “Thematic analysis can be an essentialist or realist method, which reports experiences, meanings and the reality of participants, or it can be a constructionist method, which examines the ways in which events, realities, meanings, experiences and so on are the effects of a range of discourses operating within society” (Braun & Clarke, 2006: p. 81). Braun and Clarke (2006) state that a theme is derived as meaning from within a data set relating to the research questions when utilizing TA for a qualitative

data set. To perform data analysis and interpretation for the study, this study applied the six phases of TA outlined by Braun and Clarke (2006). These phases are: Phase 1 – Familiarizing yourself with your data; Phase 2 – Generating Initial Codes; Phase 3 – Searching for themes; Phase 4 – Reviewing themes; Phase 5 – Defining and naming themes; and finally, Phase 6 – Producing the report (Braun & Clarke, 2006: p. 87).

The study uncovered four major themes: Technology, Employee, Management, and Organizational Practices and Norms. Using the panopticon model as a tool for sense-making and interpretation, we further mapped the panopticon effects associated with these themes and sub-themes discovered in the research.

FINDINGS AND DISCUSSION

The first research question relates to the first theme, *Technology*, and its sub-themes (*Familiarity, Participation Roles, Trust & Rapport, Technical Support*); the second question relates to the second theme, *Employee*, and its sub-themes (*Triggered Concerns, Impacts on Performance*). The third theme, *Management*, and its associated subthemes (*Management Style, Communication Approach, Organizational Needs*), as well as the fourth theme, *Organizational Practices and Norms*, and its associated subthemes (*Implementation, Intervention, Policies & Procedures*), provide deeper insights that influence academics' perspectives on the use of electronic monitoring while working at PUA and PUB.

The Widespread Use of Electronic Monitoring in PUA and PUB

Based on the research findings, three technological tools - a biometric attendance system, closed-circuit television (CCTV) cameras, and a Learning Management System/Integrated University Management System - were implemented at PUA and PUB to monitor academics electronically. Following the electronic panopticon metaphor (Botan & Vorvoreanu, 2005; Manokha, 2018, 2020), these technological platforms are a visible surveillance tool for the invisible 'watcher' to monitor, referring to the university management and authorities, and the 'watched,' i.e., academics for work performance monitoring where the technological features embedded in these technologies put in place the elements for control and discipline in the workplace.

The two lessons we draw from the findings in relation to this are as follows. First, the academics had a positive opinion of these applications because they were familiar with the technological aspects of the platforms used for electronic monitoring at their university. Second, the level of ICT team proficiency, management approaches for performance monitoring, awareness that they are being observed electronically, and readily available support systems can all have an impact on academics' attitudes toward electronic monitoring.

Based on the analysis, most academics in the study saw the value of electronic monitoring as an alternative to conventional forms of surveillance. Some have cited the advantages of the application, including better safety, greater productivity, the opportunity to monitor potentially unlawful or unethical actions, and the enforcement of accountability and duty in the workplace. Data and information storage, analysis, and dissemination were all thought to be improved by switching to electronic monitoring. The application was viewed to save time and be cost-effective when dealing with unfavorable or criminal situations.

“Managing these activities [monitor and surveillance] manually and extensively are tiresome and, to some extent, maybe not possible as well. At the same time, there are issues of biased and partiality when we do things manually. As everything is getting modernized & computerized using technologies ...it is more effective... Electronic monitoring is less biased, more effective, easier to calculate, and easy to handle.” (R5-PUA)

“This practice is common everywhere. It does not bother me; rather, I think the practices can assist me ... if any incident happens, I can find the video recording ... A biometric attendance system is also necessary for record and accountability purposes.”(R9-PUB)

R1-PUA, who has worked for PUA for over 14 years, has mentioned that he is aware of the deployment of systems to *“record staff attendance and other activities, and evaluate work performance annually or periodically.”* Some academics were also well-versed in the capabilities of various monitoring devices.

“It is not 100 per cent accurate. It can only show the data but cannot show the reason behind the data. There is a significant gap in qualitative judgment, but quantitative judgment is accurate. The system can calculate the data accurately, but the subjective part is missing.” (R5-PUA)

“It is done frequently ...an ongoing process. They {operators of CCTV security cameras} recorded every day. If needed, then they {technology operators} watch it otherwise not.” (R6-PUA)

“We have a system called Integrated University Management System (IUMS), where at the end of the semester, a teacher needs to submit their grade sheet, which is also a monitoring part for checking whether the faculty member evaluates the answer script timely or not.” (R6-PUB)

Most participants were favorable to the university's needs regarding the widespread installation of CCTV camera surveillance on campus, which is considered important and justified for campus safety and security. Surveillance and monitoring activities utilizing CCTV cameras are standard procedures in various public and private organizations in Bangladesh. Several local studies highlighted increased surveillance and monitoring in the education sector in the past few years (Sultana et al., 2022; Sifat et al., 2022). For example, the 2019 event in which a second-year university student was beaten to death on campus prompted BUET university management to place the campus under severe supervision utilizing advanced surveillance and monitoring tools (Jasim, 2021). As a result of the incident, advanced CCTV cameras and a unified ID card system would be widely placed to track the movement of teachers, students, and others throughout the university (Jasim, 2021).

In addition, most participants reported positive feedback regarding the technical support they received and were satisfied with the function and role of their university's ICT Department/Centre. According to R1-PUA, their *“...IT department team is fully equipped with skills, well experienced, and knowledgeable. About their performance, they are very quick...they are very helpful ...”*. R3-PUB commented that *“...so far, our ICT department provides good services ... no complaint arises regarding the bias in my university.”* R4-PUB stated that their *“ICT department comprises highly qualified personnel.”* R5-PUB praised their university team and commented that their *“...top administrators are very good ... many are technically knowledgeable person...can rely on them”*. The ICT Department at PUB has a data centre that handles 12 portals simultaneously. All the participants applauded the department's efficiency in delivering support services at their universities.

In the case of PUB, this study discovered that the university's management approach to using electronic monitoring to monitor academic staff was not overly stringent, and there were policies and guidelines to which the employees could refer. According to R6-PUB, this is likely why most academics and non-academics viewed the application positively and as having the potential to boost their work efficiency.

“I found mixed feelings among my colleagues ... some appreciate this system, and some are not welcoming this approach. Even the administrator group also has a mixed opinion. But my university has no strict monitoring system ... possibly the faculty members are productive.” (R6-PUB)

R5-PUB, an assistant professor with over ten years of experience at the institution, even advised upgrading the existing CCTV cameras and network infrastructure to include more modern functions.

“If you just have some system that is monitoring a person or staff just for the purpose of video recording for security, checking their record from the video, it is a very hassle work, I think. But if your system is integrated with smart video enhance technology, then it can be very valuable.” (R5- PUB)

In the context of PUA, R8-PUA, the Head of the IT Department, stated that senior faculty members were more resistant to the use of electronic monitoring systems to monitor work performance than junior faculty members.

“In every organization, there can be several types of users. Some negativity is also there ... especially the senior faculty members like professors who are not used to technological things. They sometimes claim some problems. Nevertheless, it is not a big issue. On the other hand, the junior has not had many issues with the system. Some problems related to the system may happen, but we can solve them easily.” (R8-PUA)

Academics’ Perceptions of Using a Biometric Attendance System

Using a biometric attendance system in compliance with university regulations, the electronic panopticon has made it easier for management and authorities to keep tabs on staff showing up for work. This has clear panopticon effects on the employee working behavior, such as increased awareness of and dedication to meeting the attendance requirement. Another important lesson that we draw from the research findings is that in highly regulated environments such as higher education in Bangladesh, the opinions of academics about electronic monitoring can be heavily influenced by external influences like government authorities.

This study found that although PUA and PUB are private institutions, their top university management has chosen to adhere to the attendance policies established by the Bangladesh Ministry of Higher Education.

“Employees, too, will have to work 35 hours each week, which means each employee will have to work seven hours as direct working hours a day...According to the policy, every department will have to evaluate teachers' performance and send the evaluation to the university authorities. Universities will also be required to submit the performance reports to the UGC every six months. The UGC will evaluate the performance of the teachers and employees, and fix the amount of manpower required for each university. No additional manpower will be recruited without the UGC's permission” (Jasim, 2022).

Most academic staff, however, criticized the attendance policy as being unjust to them. The nature of academic employment, in which it is usual for an academician to spend time at work and home to complete specific sorts of work, such as grading, class preparation, and research activities, was highlighted as the primary reason such policy should be reconsidered. Some have expressed concern that the hours they spend at home working effectively on work-related tasks will not be counted under this policy, which will utilize a biometric attendance system to track their attendance at work. Several academics also stated that such a strategy would have little effect on their research productivity.

“Following regulations, we must stay in our office 5/7 hours ... some people follow the rules and do nothing productive. Sometimes, I do not feel like working and cannot concentrate on my work ... but as there is a regulation to stay at the office for some specific hours, I must stay and do nothing productive.” (R4-PUA)

“...it impacts my performance negatively ... like when I must stay 35 hours a week at my office, but I must do research work or answer script checking at home because these activities need a quiet environment ...office environment is not suitable for that kind of tasks for me. So, my point is that, after working or staying a long time at the office, I must work again at home, which is frustrating. Sometimes, I feel this monitoring attendance activity is also insulting for me ...” (R3-PUB)

A study conducted by Hossain (2016), involving 250 university academics from fifteen private universities revealed that in addition to teaching responsibility, the excessive administrative workload with no compensation had increased dissatisfaction and severely affected staff career development to advance in other important professional competency areas such as research and training. Hence, observing such responses from the research participants from these universities regarding the latest attendance policy is not surprising.

Academics’ Perceptions of Using Learning Management System

To monitor productivity and manage academics' work performance connected to T&L, both universities, like other academic institutions, use a learning management system (LMS). PUB's Integrated University Management System has LMS functionality. Another important takeaway from the findings is that academics will support the use of electronic monitoring if the technological components are tailored to provide them with more control.

For example, the availability of student feedback tools within the LMS application has tremendously aided the academics at both universities in improving instruction delivery and student learning quality. The academics' enthusiasm for and satisfaction with the supportive panopticon environment gave them the confidence to make positive changes in their classroom practices. This panopticon effect, feeling empowered, is because of the higher visibility of information provided by the technology in use that can permit academics to work more efficiently and effectively. Also, their visibility in the organization allows them to exercise process and outcome control much better (Elmes, Strong & Volkoff, 2005).

R1-PUB, for example, stated, “I take it positively because of students’ feedback. I come to know what my strength is and in which part I need to improve more. This system has a positive impact on my performance.” R2-PUB, on the other hand, raised reservations about depending on IUMS to assess the quality of teaching and learning processes. She commented: “...a biometric attendance system is accurate. But for the student’s evaluation process, sometimes this feature can be manipulated ... as the evaluation is coming from the students, there is ambiguity in the process ... so, it is not 100 % accurate ...”

R6-PUB justified the decision from the authority standpoint as follows:

“For two reasons, we need this system [IUMS], first to motivate the employee and second for improvement. When any faculty member gets good student comments, it automatically motivates him, and he can become more confident, especially for young and new faculty members. Secondly, they can find the area where they need to work to improve; they can understand the psychology of students, which is very crucial in a teaching job.” (R6-PUB)

R5-PUA, a senior academician with over ten years of experience, voiced his desire for the university management to consider upgrading their university’s existing LMS to incorporate more smart features to facilitate them in T&L.

“If we can take this system to that level, where the system can personally monitor my data, then it can provide effectiveness as outcomes to my organization...if you develop a learning management system, a fully consolidated learning system will be more beneficial. In that

system, we can monitor their quiz, grade, how many exams or quiz will complete in a month...everything can be monitored by this system.” (R5-PUA)

Academic Staff’s Concerns on Ethical Use of Electronic Monitoring

In the research, surprisingly, we discovered that most academics had little concern about the widespread installation of CCTV cameras and the usage of other means of electronic monitoring at their universities, and whether such activities raise issues about invading employee privacy. We speculated that factors such as employment uncertainty due to the perceived long-term economic impact of the COVID-19 epidemic and Bangladeshi workplace culture contributed to our participants' having little concern about privacy matters among our participants, as revealed by the research findings.

Academics in private universities prioritized job security and connected it to job satisfaction because of Bangladesh's persistently rising unemployment rate (Masum, Azad & Beh, 2015). Bangladesh's unemployment rate increased from 4.4% in 2019 to 5.2% in 2020 and marginally fell to 5.1% in 2021 (Trading Economics, n.d.). In their study, Sultana et al. (2022) found that academics at private universities had some negative feelings due to job loss anxiety and financial difficulty during the COVID-19 pandemic lockdown in Bangladesh. Regarding privacy issues, the majority of academics in the research only voiced privacy policy violations if the university administration increased their stringent monitoring and movement tracking using multiple communication platforms outside of regular working hours.

In the past, it was asserted that private university administration tended to lay minimal attention on workplace conditions and facilities, academic staff compensation packages, and career progression due to the profit-oriented nature of business (Masum, Azad & Beh, 2015). Additionally, Bangladeshi workplace culture has a reputation for being hierarchical, with a strong respect for authority and a focus on collective rather than individual identity. From this vantage point, we think that the perception of the hardship of losing a job during the pandemic lockdown situation in Bangladesh is more significant than the attitude toward individual privacy. To support our observations, more investigation is required.

In the findings, some participants highlighted the need for their performance records to reflect the quantity and quality delivered. Accordingly, quantitative and qualitative data and information should come from various sources rather than relying solely on one platform, such as a specific technological means to monitor their work performance electronically.

“I do not find anything wrong with that ... I do not feel any harm, but the system should be improved or customized. The whole dependency on electronic monitoring is impossible because subjective evaluation is missing. For education, the monitoring system should be there for the disciplinary and compliance of working hours at office ... there is nothing wrong with the use ... but that should not be the only input in the consideration for staff performance in the higher education sector.” (R5-PUA)

The interviewees were also asked how they would feel if a CCTV camera was set in the classroom to monitor student behavior and lecturers' teaching performance during T&L activities. The majority of academics were opposed to such measures. It is also worth noting that this subject quickly produced irritation and wariness among them during the interview session.

CONCLUSION

This study contributes to a deeper knowledge of the effects of electronic monitoring by capturing important insights from the viewpoints of Bangladeshi academics. The study has expanded the implementation of Botan and Vorvoreanu's (2005) electronic panopticon model by demonstrating how external influences can shape panopticon effects, sometimes more than internal influences. In the

case of private universities in Bangladesh, government involvement in the higher education sector through directives and policies can considerably impact university administrators' decisions and actions to use electronic surveillance. This will directly impact academics and how they carry out their professional responsibilities. According to Kabir (2013), the Private University Act 1992, the 20-year Strategic Plan for Higher Education 2006-2026, and the 5-year Higher Education Quality Enhancement Project in 2009 were Neoliberal reforms implemented by the Bangladesh government starting 1990s. The Private University Act empowers philanthropic organizations, associations, and individuals to establish private universities with government approval (Kabir, 2013). The Act was revised in 1998 and repealed in 2010, with the new Private University Act 2010 bringing major changes to strengthen regulations of private universities (Kabir, 2013). Yasmin (2018) deliberated on some internal governance issues confronting private universities that necessitate government participation to control academic quality.

Furthermore, as the study demonstrated, electronic monitoring can be used to monitor academic performance and work performance effectively. However, it is critical for education authorities at all levels to completely comprehend the technological consequences of monitoring and surveillance techniques, especially unanticipated ones, and to thoroughly examine them in the risk assessment activity. Psychological and emotional concerns must be carefully assessed in the context of the growing use of technology for employee monitoring in the workplace.

Additionally, this study has shown that effective implementation of an electronic panopticon can create favorable consequences only if academics believe the technology is being used to benefit them and the authorities. Technology's technological features for T&L, such as its ability to collect and share data and information automatically with academics, are critical for developing trust and empowering them. However, educational institutions must have a clear policy regarding the uses and purposes of electronic monitoring, as well as how monitoring data and information will be used. With increased artificial intelligence functionality embedded in the development and implementation of electronic monitoring, it is more important than ever for organizations, including universities, to establish accountability and governance framework and guidelines to ensure that employees' rights are protected in accordance with the organization's policy.

This research has certain limitations. Due to time constraints and the difficulties involved with the COVID-19 pandemic lockdown, data gathering was limited to only two private universities, limiting the findings' generalizability. Future studies should include multiple case studies, including public universities, to advance work in this area of research.

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The Advisory Program: A Space for Nurturing Student-Teacher Relationships to Strengthen Student Advocacy in a Progressive Secondary School

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Abstract

Student motivation and engagement are linked to the quality of relationships they have with adults at school. An advisory program is one site for developing warm, caring relationships between students and teachers. Effective advisory programs have two-fold benefits: they enhance students' feelings of belonging and build teachers' ability to understand their professional role beyond that of curriculum instruction. Teachers with explicit professional expectations to develop relationships with students and provide social and emotional support are more effective across multiple domains. The purpose of this qualitative, ethnographic case study was to understand how the structure of an established advisory program in a small, secondary school serves as a space to support teachers, as advisors, in building relationships with their advisees to provide them with academic, social, and emotional guidance. Interviews with advisors and administrators point to the advisory program as a central structure for cultivating trust-based relationships. Within this structure advisors and administrators collaborate to enhance student success in achieving goals through advocacy. Findings indicate that advisors feel supported within this structure to navigate their expanded role, build strong relationships with their students, and advocate for their advisees' needs. They point to key functions of the advisory program structure, including the meeting system and administrative support, as factors that enable them to grow strong relationships with their students to nurture self-advocacy.

Keywords: Teacher–Student Relationships, Teacher Roles, Teacher Support, Trust, Advocacy, Advisory Program, Engagement, School Belonging, Secondary Teachers

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INTRODUCTION

Students show increased motivation, engagement, and social competence when they develop warm, caring relationships with adults at school (Wang et al., 2020). In an advisory program, teachers, who serve as advisors, foster relationships by providing academic, social, and emotional support to their small group of advisees. In doing so, they take on a professional role that extends beyond a traditional role as the instructor (Phillippo, 2010; Phillippo & Stone, 2013). Advisors can better support to students when they receive professional development and coaching to strengthen relationship-building characteristics and provide social and emotional guidance (Allen et al., 2013; Booker, 2021; Phillippo, 2010; Yee Mikami et al., 2011). However, scant research exists to understand how advisory programs can be structured within a school to fully support students and teachers, particularly in the upper grades.

Research has linked effective advisors and advisory programs to specific characteristics (Phillippo, 2010). Advisors' interpersonal characteristics, such as developing and sustaining warm, caring, bounded relationships, can be built up through professional development (Alarcón & Bettez, 2022; Phillippo & Blosser, 2017; Phillippo et al., 2018). External characteristics of the school-level systems of support, like an advisory curriculum and administrative coaching, aid advisors in balancing the role of advising with their existing teaching load (Phillippo & Stone, 2013). A secondary external characteristic of effective advisories is an adherence to a Progressive philosophy. Progressive schools have long incorporated advisory programs into their daily fabric to enhance students' feelings of belonging (B. Johnson, 2009). Time spent in advisories encourages teachers to focus on understanding students as individuals who are developing a sense of belonging within a community of individuals (Read, 2013; Shulkind & Foote, 2009).

This article seeks to understand the school-level factors of an existing advisory program. It is an exploration of the structure of a long-standing advisory program in a Progressive middle and high school. Structure, in this study, is defined as the policies and procedures embedded in intentional spaces within a school. The structure is shaped by and includes the school leaders who organize the advisory program and support teachers, as advisors, as they support students to engage positively, both academically and socially. One key facet of this structure is the school's expressed commitment to cultivating and nurturing trust and relationships to achieve student success in social, academic, and behavioral goals through advocacy.

Studying systems that foster relationships and student advocacy will aid in identifying school-level characteristics that increase our understanding of the mechanisms through which they operate (Diehl, 2019). Therefore, the purpose of this ethnographic case study is to understand how the structure of an advisory program serves to support teachers, as advisors, in building relationships with advisees. The advisory program provides a mechanism through which advisors and administrators collaborate and problem-solve in a way that supports advisors to navigate their expanded role of building strong relationships with their students and advocating for their advisees' academic, social, and emotional needs.

Related Literature

The work of building effective relationships between teachers and students, and its impact on academic success has been studied at multiple levels. Research outlines internal and external characteristics teachers mobilize to form warm, caring relationships (Booker, 2001; Carlisle, 2011; L. Johnson, 2009). Other studies explore how to facilitate stronger relationships among students (Balkus, 2006; Keyes, 2019; Yee Mikami, 2011). The third line of inquiry connects strong relationships to student advocacy (Hafen, et al., 2015). However, each of these component pieces does not provide a holistic understanding of the processes, procedures, and people involved in building a school climate to nurture these relationships.

This study adds to the literature by proposing an understanding of effective relationships among adults and students within a school as a function of the structural supports built into the school fabric to support these relationships. This work is situated within three main bodies of literature, outlined in the following review. First is an overview of student engagement. This is followed by research on how teachers are trained to foster warmth and supportiveness. The section ends with a review of scholarship highlighting the importance of advisory programs and their role in strengthening classroom climate.

Student Engagement

The overarching reason behind schooling and education is to teach students. Therefore, attempts to improve elements of the school structure or the roles of the adults at the school must be understood through student motivation and engagement. Student engagement is defined as "the outward manifestation of motivation... Motivation refers to the underlying sources of energy, purpose, and durability, whereas engagement refers to their visible manifestation" (Skinner & Pitzer, 2012, p. 22). The visible manifestations of engaged students include behaviors such as: attendance, following directions, completing assignments, and an overall positive attitude toward learning (Finn & Zimmer, 2012).

Academic engagement defines how students experience school both socially and psychologically. Therefore, it is critical to view students as actors who shape and are shaped by the school and classroom environment. The classroom setting impacts their engagement with the teacher, the content, and their classmates (Balkus, 2006; Booker, 2021; Carlisle, 2011; Skinner & Pitzer, 2012). When students' social and academic needs are met in a positively, they are more likely to experience constructive outcomes such as higher grades, more time on task, and more positive interactions with teachers and other engaged classmates (Connell & Wellborn, 1991). The inverse is true when students' needs are not met or are met in negative ways. Context, therefore, mediates how students show up in the classroom. As such, students can improve their educational and social achievement by shifting the environment (Finn & Zimmer, 2012; Lamborn et al., 1992; Torres, 2021).

One key component that shapes student engagement is their relationships with their teachers. The next section shows how teachers learn to build and nurture these relationships.

Nurturing Strong Relationships in a School Context

One of the most predictive factors in student engagement is having a warm, caring relationship with adults at school (Allen et al., 2013; Carlisle, 2011; Finn & Zimmer, 2012). The research defines teacher warmth as a "collection of attributes including liking and being interested in their students, believing in their capabilities, and listening to their points of view. Supportive teachers show respect for each student as an individual, hold clear and consistent expectations for student behavior, and provide academic assistance for students who need it" (Finn & Zimmer, 2012, p.106). This collection of attributes is a combination of natural personality traits and learned behaviors: a set of skills that can be grown and developed.

However, solely focusing on teachers' skills overlooks the fact that all teachers are operating in a school system with multiple, competing demands for their time and attention. So often, with the demands of high-stakes testing, teachers are encouraged to view their role narrowly— as a deliverer of the content. This negatively impacts relationship building (Phillipo & Stone, 2013). Therefore, developing individual relationship-building skills is only effective to the degree to which teachers are given the time and space to grow relationships. Phillip and Stone (2013) conducted research with teachers whose administrators expressed explicit expectations to develop relationships and provide social and emotional support to students through an advisory role. Their findings indicate that if teachers frame their job understanding to include student support and strong student-teacher relationships, students notice that teachers care about them as whole people and respond positively, with measurable gains in social, academic, and personal domains. Furthermore, Phillip and Stone

(2013) found that teachers with a broader sense of their role felt confident providing student support; thereby creating a positive expectation-fulfillment loop for both teachers and students. These findings indicate that, while individual skills are important, it is necessary to study them within the context of expectations that are placed on teachers and the larger system in which they work. Viewing relationships within the whole school system is critical to understand the extent to which the system provides teachers with the structures and support to nurture positive relationships with their students (Diehl, 2019). The next section outlines research on advisory programs as one such support structure.

Advisory Programs

Despite evidence that teachers, as advisors, can build stronger relationships with students, scant research exists to understand effective advisors and advisory structures. Most research on advisories is with a focus on academic coaching (Balkus, 2006; B. Johnson, 2009), while others have studied advisories as a site for building relationships among students (Carlisle, 2011; Shulkind & Foote, 2009). In one study conducted with administrators in progressive schools that have long-standing advisories, five factors were found to impact the success of the advisory program: time, staff development, leadership and organization, implementation, and sustainability (B. Johnson, 2009). Administrators in B. Johnson's (2009) study noted that teacher-advisors saw advisories as, "crucial to the overall mission of the school... [and] inextricably connected to being a good teacher... [they] care strongly and value time with students and particularly value being an advisor to the students they teach in class" (p.3). These findings point to the dual nature of teachers' roles as instructors and advisors. Maintaining a system to build authentic, personal connections is difficult. It requires intentional work on the part of the administrators and teachers. B. Johnson's (2009) analysis is that the effectiveness of an advisory program lies in the quality of advising that teachers provide, "if schools can create systems of professional development that genuinely prepare teachers to be effective advisors, the school culture will flourish. If not, advisories will be problematic" (p. 3), which further emphasizes the importance of understanding advisories from a systemic perspective.

Furthermore, Carlisle (2011) found positive associations between teachers' relationship-building skills and intentional school policies and practices, such as advisory programs. Both Balkus (2006) and Grolnick & Pomerantz (2022) outline the importance building clarity between parents, students, and staff regarding the objectives of advisory programs. This consensus-building requires significant and ongoing staff development and family outreach in terms of both shared purpose and advisory content development.

A key marker of a quality advisor is their ability to advocate for students (Cunitz et al., 2011; Balkus, 2006). Having strong relationships allows space for students to trust their advisor to ask for help, and that the advisor takes this a step further by advocating for the student to get the services they need to succeed. Having a trusted advocate helps students to mobilize support they otherwise would not be able to get. This system of building trust and advocacy is explored further in the next section on classroom climate.

Classroom Climate

One way to study school ecosystems is to assess the climate. Hafen and colleagues (2015) show that in secondary schools, classroom climate is one observable, measurable dimension within the Teaching Through Interactions framework. This framework links teacher and student interactions to student academic achievement by measuring relationships across three domains: relational support, autonomy/ competence support, and relevance (Hamre et al., 2013). Within this framework, relational or emotional supports include positive or negative climate, teacher sensitivity, and regard for students' perspectives. Autonomy and competence supports are measured through behavior management, productivity, and instructional formats. Relevance includes content understanding, analysis and inquiry, and quality feedback.

Classroom climate, then, is built upon the emotional connection and relationships between teachers and students. It can be observed in the level of warmth, respect, and enjoyment teachers and students derive from being in class (Hafen et al., 2015; Hamre et al., 2013; Wang et al., 2020). When students report a strong relationship with their teacher, they are more likely to seek help because they trust that their teacher will provide it in a supportive manner (Booker, 2021). In classrooms with a positive climate, students also develop healthier relationships with their peers (Carlisle, 2011) and are more engaged in their learning (Skinner & Pitzer, 2012).

While research on classroom climate, warm, caring relationships, student engagement, and advisory programs all point to the importance of how students and teachers interact, there is little research that provides insight into ways in which schools can structure their day-to-day policies and procedures to best maximize positive relationships. The next section outlines how this study aims to better understand a school system that does just that.

METHODS

Study

This article is derived from a larger dissertation on sustaining Progressive education reform at the Castanea School (a pseudonym)— a progressive, gender-inclusive day school serving grades seven through twelve. The school is located in a large, metropolitan area on the East Coast of the United States. It is an independent school with tuition that, for some students, is offset by needs-based scholarships or funding from the students' home districts. The complete dissertation research examined the roles of teachers and teacher learning in navigating the school's organizational structures to sustain Progressive education reform (Author, 2017). I collected the data for this ethnographic study throughout the 2015-2016 school year.

In its entirety, the dissertation explored multiple structural features at the school. In this article, I focus on how the advisory program functions as a systemic, structural foundation to assist teachers, as advisors (*teacher-advisors*), to support students by providing them with academic, social, and emotional guidance. I do so by answering the following research questions:

1. How does the structure of an advisory program work to support teacher-advisors to provide their advisees with academic, social, and emotional guidance?
2. How does the structure of an advisory program work to support teacher-advisors to build relationships with their advisees?

Participant observation was the primary source of data collection in this ethnography. My approach included "direct observation of human behavior and the physical features of settings, informal interviewing, and document analysis" (McKernie, 2008, p. 599). In the tradition of Wolcott (2008), my participant observation hinged on what I experienced through my senses and then translated into observation notes and analysis to interpret the Castanea advisory program.

The continuum of participant observation ranges from complete (or naturalistic) observer, where the researcher observes the setting, but does not interact with the participants, to complete participation, where the observer actively engages and works alongside the participants (Gold, 1958). In this study, I took the approach of "participant as observer [where] ... an observer develops relationships with informants through time, and where he (sic) is apt to spend more time and energy participating than observing" (Gold, 1958, p. 220). Trust building is a key element in this type of observation. I spent the first months of my fieldwork observing classes and school events. Once I had built rapport with the teachers, I attended meetings. While I observed all the various meetings that regularly occur in the course of the school year, the ones most salient to the current analysis are the advisory program meeting loop. This loop includes feedback and support team meetings. They are explained at length in the findings section.

Interview data was critical to understanding how advisors and administrators experienced the advisory program. I used purposive sampling to invite anyone who considered themselves part of the school’s progressive community to participate in either a focus group or individual interview (Creswell, 2012). Ten of the school’s 15 total advisors and six of the eight administrators accepted the invitation. Table 1 includes interview participants’ job title, role in advisory program, number of years at the school, and the type of interview they participated in. The pseudonym markers are used throughout the findings to attribute quotations.

Table 1 Interview Participants

Job title	Role in advisory program	Pseudonym marker	Years at Castanea	Type of interview
Middle school history teacher	Middle school advisor	H1	2	Focus group
Upper school English teacher	Upper school advisor	E3	15	Focus group
Upper school learning specialist	Upper school advisor	L2	8	Focus group
Performance art teacher	Upper school advisor	SP	11	Focus group
Upper school science teacher	Upper school advisor	S2	4	Focus group
Upper school history teacher	Upper school advisor	H2	5	Focus group
Visual art teacher	Upper school advisor	SV	26	Focus group
Upper school English teacher	Upper school advisor	E2	11	Individual
Math teacher	Upper school advisor	M1	3	Individual
Administrator: Head of School	Advisory support	HoS	17	Individual
Administrator: Director of learning support	Advisory support	LS	13	Individual
Administrator: Director of emotional services	Advisory support	ES	30	Individual
Administrator: Director of admissions and college counseling	N/A	ADM	21	Individual
Administrator: Director of technology	Upper school advisor	DT	5	Individual
Administrator: Assistant to the Head and advancement associate	N/A	AtH	1	Individual

Data Analysis Procedure

Data analysis occurred in several phases. I organized observation notes according to meeting types and read through each note type. In subsequent readings, I used colored text to identify preliminary codes. I used these codes in a sequential manner to design thematic focus group and individual interview protocols around two key ideas: trust and belonging within a community; and academic differentiation. I transcribed each interview and listened to the recording multiple times to verify transcriptions and construct initial interview codes.

After analyzing the interviews for preliminary codes, I cross-checked the interview codes with those from the participant observation. I composed analytic memos to capture my emerging ideas (Maxwell, 2013). At that point, my analytic memos led me to reorganize the preliminary codes by themes. I distilled each theme into 5–15-word statements, ensuring to keep the original language as much as possible. I then imported the preliminary codes into The Brain, a mapping software, to visualize how potential codes might relate to one another categorically. In The Brain software, I was also able to attach illustrative quotes and recollections for each of these potential codes to the corresponding node on the map, which allowed me to stay grounded in the data.

As I developed findings, I actively sought respondent validation, which is crucial to ensuring that researchers are not misinterpreting participants’ words and for identifying researcher bias (Maxwell, 2013). I maintained contact with key participants throughout the study and asked for additional clarifying information as needed.

The following sections explore detailed findings on the structure of the advisory program as a means of support to advisors. Findings also outline the role of trust in nurturing relationships, and the importance of advocacy as a means for understanding and meeting students’ educational goals and needs.

Finding 1: Structuring an Advisory Program to Support Advisors

Castanea's Advisory Program

Because existing research makes clear the need to view student-teacher relationships as a function of the school ecosystem (Phillippo & Blosser, 2017; Phillippo, et al., 2018; Phillippo & Stone, 2013) the first finding outlines the structure of Castanea's advisory program as a support for teacher-advisors to nurture positive relationships with and provide guidance for students. Castanea's Progressive advisory program operates on the principles of communication, advocacy, and trust. All full-time teachers are advisors. Each advisor is responsible for 6-10 students. Advisories meet twice daily for a total of 25 minutes. Advisors organize community building exercises and talk, individually, and as a whole group, with advisees about goal setting for academic, behavioral, and social needs. It is within this space that each student is heard and respected, not only by their peers, but also by an adult in the school (Cunitz et al., 2011).

A major tenet underlying Castanea's Progressive philosophy is that students are self-aware of their own strengths, barriers, and needs. To foster this, advisors coach students to advocate for a learning environment that aligns with their learning profile. Through this process, advisors come to understand how their advisees make sense of their own reality and how their perception shapes their personality, their interactions with others, and their learning needs. The advisor and the student determine what conditions the student needs to learn, grow, and thrive.

Advisory Meeting Structure

In addition to meeting with their advisees twice a day, advisors also meet with their support teams once every four weeks. Support teams consist of the Director of Learning Support (LS), the Assistant Head of School, both of whom sit on the school's administrative team, and at least one member of the Emotional Support (ES) team. The ES team includes one director, who sits on the administrative team, one full-time social worker, and five interns from local universities who are studying social work, counseling, or therapy. The ES team members are available throughout the school day on an as-needed basis for any student who is having a hard time. Additionally, they have regular appointments with students who require therapeutic support beyond what advisors or teachers can provide. The ES team also maintains contact with any outside therapists or counselors that the students see.

During support team meetings, the Director of LS reports back on data she has compiled on each student from the previous week. She collects this data during an additional system of feedback meetings. Feedback meetings occur weekly with each of the teams of teachers at the school. The agenda for feedback meetings is for teachers to provide input on each student's academic, behavioral, and emotional state while in their class, or in other settings where they interact, such as activities or service learning. The ES agenda item during support teams is to report on students' social and emotional progress both within the school and with outside therapists in a way that ensures confidentiality and complies with HIPPA guidance. The Assistant Head of School provides data on behavior, discipline, and attendance.

In support team meetings, the advisor works to bring the student's voice to the table. The Director of LS represents the teachers' voices. The clinical staff share a therapeutic perspective. The Assistant Head of School provides a global view of how individual student behaviors and interactions impact the social and behavioral ecosystem of the school at large. Through this process, they work to understand the social and academic progress of each advisee, both as an individual and as a member of the school community. Ideally, this leads to the provision of equitable support to foster each child's social, emotional, and learning needs while maintaining the classroom climate of decency and trust (Cunitz et al., 2011).

When an action item comes up in these meetings, it is the advisor's responsibility to inform other teachers, the student, and the student's family, then work out a way to put the plan into action. If the action item extends beyond reasonable work or relationship boundaries for the advisor, one of the administrators present in the support team will assume responsibility for it.

The main role of an advisor is that of an advocate for their advisees. Effective advisors pay attention to each of their advisees to understand who they are as multi-faceted people, how they see and understand the world, and in turn, how others (particularly other teachers) see and understand their advisees (Cunitz et al., 2011). They then 'translate' the student's perspective into a language that can best be understood and acted on by the other adults in the meeting, at the school, and in the child's life. Some Castanea students have struggled in other school settings because they lacked the self-advocacy skills required to communicate their needs or have not had adult advocates to ensure that teachers understand their needs. At Castanea, the advisor, as advocate, is considered one of the most valuable assets in ensuring student success.

Finding 2: Building a Trust-Based System

All school community members attest that trust is a bedrock value of the Castanea community. The Head of School uses the phrase, "trust-based system" regularly when addressing the whole school. He uses it to introduce and reinforce rules such as physical boundaries and behavioral expectations. He uses it when he announces that belongings have gone missing – even when he has a strong suspicion that something has been stolen, he sets up a plan of anonymity for anyone who has information to report it in a confidential, non-punitive way. He uses the phrase to talk about lunch time when students have a high degree of freedom to use their time in a way that suits them, and without constant adult supervision. He also uses the phrase to encourage students to practice academic honesty. But it is within the day-to-day work in the advisory where trust gets taught and modeled explicitly. This section lays out this process using data from individual and focus group interviews. Quotes are attributed to individuals using the pseudonym markers from Table One. Because teacher-advisors move fluidly from one facet of their expanded role to another, the terms *teacher* and *advisor* are used intentionally throughout the findings to indicate the facet or perspective of their role the individuals are speaking from.

Many advisors feel that this system of trust presents a steep learning curve for students. Castanea is unique in the level of trust that adults place in students, so depending on what their previous educational backgrounds may be, it is safe to assume that many students have not been in a trust-based system before. In fact, the students who come to Castanea from the adjacent urban public school district with metal detectors and school safety officers in each building are used to a system where they are actively mistrusted. So being trusted "is a new experience. Some students flourish in it and take on leadership roles" (H2). Many students learn to take ownership of their learning and behavior when they are trusted to make their own educational agenda. However, for others, they, "don't know how to react to the kind of independence that goes along with the trust-based system" (H2).

To clarify how trust gets operationalized at Castanea, one teacher explained her stance on academic honesty. As an upper school English teacher with 15 years of experience at the school, she is realistic about the idea that students will cheat. There are circumstances in students' daily lives that lead to them copying one another's work. She acknowledges that reality and begins her interactions with them more from a place of respect than of trust:

The bottom line for me is about treating them with respect ... When I hear trust-based system, to me that's a reminder that I am assuming the very best intentions on their part. If they do things that are wrong, there are good reasons that I can understand and feel compassion for. And that's what I'm going to lead with, is that compassion, while also holding them responsible so that they can learn. (E3)

Another advisor went on to explore the deeper philosophy of positive intent that underpins trust:

Part of being a trust-based system is that we assume positive intent, or that we assume that people are doing the best they can, even if the best they can is a little bit sucky. ... If somebody makes a mistake or does something bad, they are not bad.... There's some circumstance that leads to them making their bad decision. (SP)

This advisor went on to explain that generally, young people are not trusted to make their own decisions, to guide their own learning, or even to make their own mistakes. Families and society so often treat young adulthood as a place to catch kids misbehaving. Therefore, entering a system of inherent trust can be confusing for some students because it is:

... in contrast to a lot of the world outside of Castanea. Some students may have an internal sense that this is a correct or good way to treat human beings, but for others ... who don't get trusted very often, ... it can be confusing to trust that this is a safe perspective to have about people. But even in moments [of punitive disciplinary consequences] there is a lot of human interaction between the adults and the young people who have done the trust breaking things. We relate to them as people. They make bad decisions but aren't bad people. (SP)

This process of learning to trust and be trusted, “takes time... time is such a big factor. We don't give up on kids” (L2).

Another factor that impacts trust is that the school, “is a very safe place for students to be and so they relax and let their guard down” (H1). However, some advisors countered that while the school may feel like a safe place for most students, there are other students who may not feel safe because of a certain identity, background, or circumstance they bring with them. One advisor described safety in this way, “I cringe when we talk about being a safe community because on any given day there are a number of students don't feel safe here, but I know that it's so much better than most places (for them)” (E3). While advisors agreed that even though some students may not feel safe at the school, they are trusted, and trust is foundational for building relationships and establishing a safe space. One advisor summed up the reciprocal nature of trust like this: “[Students] inspire trust in us. But we don't just hand them (trust). They come to us wounded and start to grow and heal. That affects us... It's a back-and-forth” (E3).

The advisors at Castanea revealed that by approaching relationships with trust as a key building block, they get to know the students as whole people, not just as pupils. This ability for teachers to see beyond the classroom to the rich lives of students is critical for teachers to respond more positively to instances of student disengagement. When teachers can trust that misunderstandings or failures are opportunities to learn, they are better able to problem solve to deal with challenges instead of punishing student shortcomings. They are more likely to respond with support and empathy (Skinner & Pitzer, 2012).

Finding 3: Supporting Advocacy through the Advisory Program

Along with trust, advocacy underpins all relationship building at Castanea. The advisor as an informed advocate is an integral component to the school's commitment to a strength-based approach to education (Author, 2017). As advisors build trust and relationships with their advisees, they come to understand what their educational needs are. Advisors bring the depth of those relationships to the advisory meeting loop where they gather more data about their advisees across social, emotional, and academic realms. These meetings focus both on what students do well, and what strategies they need to grow. Advisors have access to their advisees' academic history and testing as well as relevant notes from their sessions with the Emotional Support team and, when applicable, their outside therapist. The goal of sharing this much information is so that the advisor can be an effective advocate. Having a

designated person in the school monitoring each child's education eliminates any barriers that parents or caregivers may have in being their child's advocate, such as time, capacity, or lack of social capital.

One advisor explained, "Our advisory system creates ... passionate advocates for students.... It's not just parents who are advocating,... but you have intelligent, passionate people 'on the in'... advocating... That creates a constructive dynamic. Our students experience way more advocacy here" (E3). Because all full-time teachers are advisors, they pivot back and forth between the two perspectives. One teacher reported that this system of advocacy helps her to focus more on her curriculum.

I am grateful, as a teacher, to have advisors that I know will help me figure out if a kid has a need that's not being met. So many kids need so many different things, and [teachers] can't hold all of that information. But the advisor knows ... their kids really well and... if something is going on with a kid that is really hard the advisor will tell me. It makes it easier to [teach] without being stressed because you know there's somebody with eyes on each kid all the time. (S2)

Another teacher agreed but noted that the high level of advocacy sometimes creates tension, or perceived unfairness.

[As a teacher] if I have an advisor who's a really strong advocate emailing me about a student, I tend to pay more attention and check on their grade more. So, is it fair that person gets the extra attention because there's a powerful advocate? I'm not sure, but what I am sure of is that those kids ...who are receiving that kind of advocacy are at higher risk for having really difficult lives [so] I think it's a good thing even if it isn't perfect. (E3)

Pivoting back and forth between the advisor and teacher perspectives is complicated, but it allows advisors to have a multi-dimensional relationship with their advisees and gives them better insight into their advisees lives as students. This relationship helps advisors to understand students' hardships, their strengths, their home lives, and their academic history in a way that a classroom teacher cannot. One participant explained the tension like this:

I put my teacher hat on, and I feel one way, and then I put on my advisor hat, and I feel completely the opposite. As a teacher you might feel frustrated [about] a student, but when we're advisors we know so much more about that person, about their home life, about their emotional struggle, about... whatever is happening. So [teachers] just see on the surface...whatever the academic issues are. But as the advisor you understand why that's happening. And so ... [as an advisor] you advocate hard for those kids. You want to give them whatever advantage you can to be successful... I [tell my colleagues] what my kids need based on what I know as their advisor, and that's something they often don't know as the teacher. (H2)

Having such a deeply rooted system of advocacy strengthens Castanea's commitment to diversity, equity, and inclusion because each student is recognized as an individual, and their individual needs are brought to light. At the same time, the school has a very diverse student body, so sometimes students' individual needs conflict with those of other students or with the overall needs of the classroom community. This conflict leads to rich, solution-oriented, complicated discussions around equity and the allocation of resources. At the core of all these discussions is the idea that teachers trust that all students can and will learn. They work tirelessly to optimize their classroom environments in a way that everyone can access.

DISCUSSION

This paper adds to a limited body of analytic research on advisory systems in secondary schools. It has made initial steps toward an understanding of how the structure of an advisory program

supports teachers, as advisors, to build trusting relationships with their advisees while also providing them with academic, social, and emotional guidance. Data from 10 of the school's 15 total advisors and six of the eight administrators reveal that a school-wide commitment to cultivating and nurturing trust and relationships is a key, structural feature that underpins how advisors and administrators collaborate to grow student success in achieving goals through advocacy. These findings suggest that the work of building warm, caring relationships, strengthens students' sense of safety and belonging. Ultimately increasing student engagement is only possible within a school ecosystem that recognizes and nurtures an expanded notion of teachers' roles beyond that of just content delivery. This has direct implications for how schools and school leaders can support both students and advisors through an intentional organization of the school structure to accommodate a comprehensive advisory program.

Research has shown that effective advisory programs make students feel as though they belong in the school community (B. Johnson, 2009; Shulkind & Foote, 2009). Students who feel a sense of belonging engage more in their schooling (L. Johnson, 2009; Wang & Eccles, 2013). This study shows that a school-wide commitment to cultivating trusting relationships with an eye toward achieving student success across social, academic, and behavioral domains can be reached through advisor-administrator collaboration. This collaboration occurs within the advisory system meeting loop - an intentional, organized structure embedded in the operation of the school. This structure is shaped by and includes the school leaders who organize the advisory program and support teachers, as advisors, as they support students to engage positively academically and socially.

Another finding that aligns with past research on student engagement is that specific teacher characteristics that impact students' sense of classroom belonging and behavioral engagement. Keyes (2019) found that one of these teacher characteristics is their ability to foster relationships with and between students. Booker (2021) uncovered that another key teacher characteristic is knowing students in a way that activates additional advocacy for them. While L. Johnson (2009) notes that students feel a greater sense of belonging at schools that place an emphasis on the developmental needs of adolescents. The findings of this study indicate that the advisors at Castanea recognize that these same characteristics in their own work. By using the intentional structure of the advisory as a space to nurture these personal characteristics Castanea teachers are able to improve their ability to connect with students in a way that helps the students to develop their own sense of agency and self-advocacy.

Previous studies exploring teacher role breadth have concluded that, while teachers are generally trained to divide the work of teaching from the work of providing social-emotional support, there are benefits to placing them in a social-emotional support role alongside their already-demanding instructional role. These benefits include utilizing a more diverse skill set when dealing with student issues, and an increased knowledge of and responsiveness to students (Phillippo, 2010). However, this same research, "strongly suggest that expanded roles can in certain circumstances contribute to teacher burnout, job dissatisfaction, or decreased commitment" (Phillippo, 2010, p. 2288). The findings from Castanea outline how an intentional system to facilitate a team-based, problem-solving approach to addressing student issues can mitigate such drawbacks. Castanea advisors acknowledge that the added role of caring for students does cause additional stress, but they are quick to acknowledge that they are well-supported by administrators to address any issues that arise. Furthermore, when thinking from the teacher perspective, they feel more freedom to focus on the work of teaching because they know that each student has a support system in place, and there is a team of professionals who will make plans and communicate those plans to teachers when problems occur.

Other research on teacher role breadth explores factors that determine teachers' sense of efficacy at providing student support (Phillippo & Stone, 2013). This research showed that, "the most salient factor to predict teachers' role breadth was teachers' confidence about providing student support" (Phillippo & Stone, 2013, p. 369). Student data from Phillippo and Stone's (2013) study suggests that when teachers frame their understanding of their job to include the work of supporting students academically, socially, and emotionally, students notice that teachers care about them as whole people and respond positively, with measurable gains in social, academic, and personal domains. At The Castanea School, students feel the commitment to trust, respect, and advocacy

(Author, 2017). Participant observation data demonstrate that a high proportion of student issues that arise are resolved through the advisory program meeting process (Author, 2019). This is accomplished through collaborative problem-solving between advisors and administrators during support team meetings. When advisors receive administrative support, they are better able to extend that same support to students. This strengthens the support team's ability to design solutions that are in line with the student's needs and goals, and thereby more likely to be effective. This finding supports research into effective teaching (Allen et al., 2013; Hafen et al., 2015; Hamre et al., 2013) by digging deep into the domain of emotional support to better understand teacher sensitivity and regard for adolescent perspectives.

In alignment with past findings, this study shows that effective advisory programs are built on an institutional system of professional development and support. Carlisle (2011) found that school policies and practices, curriculum and instruction, and school organization impact the way in which teachers build relationships with students. While Balkus (2009) noted that a successful advisory program hinges on parents, students, and staff all understanding the objectives of the advisory program and its necessity. Furthermore, Balkus (2009) and B. Johnson (2009) both point to the necessity of staff development, not only at the inception of an advisory program, but also in an ongoing manner. This study concludes that the day-to-day collaboration between advisors and administrators in support team meetings is a form of ongoing professional coaching to differentiate care for students. That coaching, combined with an institutional commitment to trust, respect, and advocacy undergirds an effective advisory program.

An unexpected finding was how advisors pointed to the institutional pillar of trust as a key component to this work. Advisors at Castanea believe that the element of trust allows them to get to know the students as whole people, not just as a pupil in class, which they cite as a foundational building block to nurturing relationships. This finding is supported by research that shows that when an intentional element of trust-building is embedded in a learning community, faculty and students alike feel a greater sense of freedom to share their more personal side, which is particularly salient for the engagement of students from marginalized backgrounds (L. Johnson, 2009). Additionally, Skinner & Pitzer (2012) explain that when teachers trust students and invite them to share the details of their lives outside of the classroom, teachers respond more positively to instances of student disengagement.

Limitations and Further Research

Limitations to this study must be acknowledged. Clearly, this study drew data from a limited sample of teachers in one small, independent school. Other state, local, or school contexts might frame salient issues in student support differently. Second, this study considered advisories from a systemic perspective. Advisory programs include other activities, that, while not investigated in this study, are essential to nurturing warm, caring relationships, such as community-building, navigating difficult conversations, and goal exploration.

Further research into systemic structures that support an expanded teacher role breadth through an advisory program is needed to test these findings across contexts. Future studies should seek out other progressive secondary schools with advisory programs that, like Castanea, honor a school-wide commitment to cultivating and nurturing trust and relationships with an eye toward achieving student success in social, academic, and behavioral goals. Schools with a similar commitment and an established advisory program could provide valuable comparison data. Additionally, future studies that explore supportive relationships cultivated through systems that encourage teachers to broaden professional role will aid in identifying school-level characteristics that foster relationships and increase our understanding of how they operate.

CONCLUSION

This ethnographic research found that that a clearly structured advisory program includes both time and space in the cadence of the school's weekly schedule for relationship and trust building

between advisors and their advisees, as well as established meetings among adults who know the advisees well and can speak to their progress across multiple dimensions. In these meetings, advisors and administrators come together to discuss data points on each student across academic, social, and emotional domains. As issues arise, they collaborate on problem solving and solution building to provide meaningful, individualized support for all students.

These plans take into consideration all aspects of each student's growth and development. They enhance student engagement by respecting students as individuals, supporting students to develop their capabilities, holding clear, reasonable behavioral expectations, and providing academic assistance or enrichment. The advisor takes on the role of student advocate, with the goal of coaching the advisee to advocate for their own needs in future situations.

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