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The current issue is the first of the thirteenth volume of the *Athens Journal of Education (AJE)*, published by the [Education Unit](#) of Athens Institute.

Gregory T. Papanikos
President
Athens Institute



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18-21 May 2026, Athens, Greece

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- Submission of Paper: **20 April 2026**

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- Athens Sightseeing; Old and New-An Educational Urban Walk
- Social Dinner
- Mycenae Visit
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The Impact of Male University Marching Band Members' Sense of Belonging on Retention at One Historically Black University (HBCU) in Tennessee

By Grant L. Winrow & Eleni Coukos Elder[†]*

The purpose of this study was to investigate how participation in university marching bands influences Black male students' sense of belonging. Sense of belonging refers to students' perceived feelings of support and connection within their campus community. For this study, sense of belonging was measured by levels of peer and faculty support, and isolation. Framed on Tinto's *Model of Student Involvement and Student Departure* (1975, 1993), this mixed-methods study explored the influence of Black males' involvement in a university marching band on sense of belonging at one HBCU. Through an online survey to approximately 80 members from the Tennessee State University's *Aristocrat of Bands* marching band and a focus group session, participants described their marching band experiences and perceptions of how the band influenced their feelings of connection and mattering. Major findings: (a) HBCU marching bands are about tradition and community-building; (b) HBCU marching bands promote student leadership development; and, (c) the more time the student participates in the band, the higher his sense of peer support and faculty support) and the lower his sense of isolation. Results may guide band and student affairs administrators in optimizing opportunities to strengthen students' integration and enhancing retention strategies of Black male students.

Keywords: marching band, sense belonging, black males, retention, HBCU

Introduction

Extensive research over the past several decades has been conducted on the factors contributing to student retention, attrition, and persistence. Vincent Tinto's (1987) pivotal work on the subject of student involvement, engagement, and student success has highlighted the relationships between "the willingness of institutions to involve themselves in the social and intellectual development of their students" (1987, p. 7). Moreover, if a key to student persistence is successful social integration on the campus community, it is important to develop pathways for students to become engaged (Raley, 2007; Tinto, 1987).

However, seen through the eyes of the students, persistence is but one manifestation of motivation (Bandura, 1989; Graham, Frederick, Byars-Winston, Hunter, & Handelsman, 2013). Students have to want to persist and put forth the energy and effort even when challenged with obstacles. Without motivation, persistence is not likely (Tinto, 2015). Given the original goals that led the student to begin college in the first place, it can be argued that the more time a student

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experiences with a social peer group in a college setting leads to a greater sense of belonging and motivation to persist in college.

According to Strayhorn (2018), “In terms of college, sense of belonging refers to students’ perceived social support on campus, a feeling or sensation of connectedness, and the experience of mattering or feeling cared about, accepted, respected, valued by, and important to the campus community or others on campus such as faculty, staff, and peers” (p. 4). The work of Strayhorn is founded on the body of work of psychologist Abraham Maslow (1954). Maslow believed that people are motivated to meet their needs hierarchically on five levels—beginning with the basic safety needs and working up to self-actualization with needs of love and belongingness in the middle. It is at this mid-point, the sense of belonging, where academic outcomes have shown improvement (Freeman, Anderson, & Jenson, 2007).

Statement of the Problem

Black male students face significant challenges with retention and degree completion in higher education. National data show that they graduate at lower rates than their peers from four-year institutions, with graduation rates on average 15% lower (NCES, 2018). This trend is also evident at the research site for this study. Over the past decade, graduation rates for Black male students have consistently trailed 15-20 percentage points behind the overall student body average according to university data.

Research has found that one key contributor to these disparities in retention and graduation outcomes is a lack of sense of belonging among Black male undergraduates (Strayhorn, 2012; Strayhorn, 2015). Students who feel marginalized on campus and do not have a strong sense of connectedness to their university community are less likely to remain enrolled and committed to degree attainment. Without developing meaningful attachments and integration both socially and academically, students have weaker motivation to persist through challenges that could otherwise lead them to drop out of college programs.

Participation in extracurricular activities and engagement opportunities has been shown to enhance sense of belonging for underrepresented student populations like Black males (Harper & Quaye, 2007). However, more research is needed to understand how involvement in specific programs, such as university marching bands, impacts sense of belonging. Examining the potential relationship between marching band participation and belonging could provide insight for improved retention strategies targeting Black male students. The lack of focus on this relationship in previous literature represents a gap that the current study sought to address.

Purpose of the Study

The purpose of this study was to investigate how participation in a university marching band impacts Black male students' sense of belonging at their institution.

Sense of belonging refers to students' perceived feelings of support, connection, and importance within their campus community. While previous research has linked extracurricular involvement to higher belonging among Black males, few studies have examined marching band participation specifically. This study aimed to address this gap by exploring Black male band members' experiences and perceptions of how the marching band impacted their sense of belonging.

Significance of the Study

The significance of this study lies in its potential to contribute to the understanding and improvement of the educational experiences and outcomes of Black males attending HBCUs. By specifically investigating the impact of peer groups, with a focus on the participation in the *Aristocrat of Bands* program, the study addressed a gap in the existing literature regarding the influence of peer dynamics on the success and retention of Black males at HBCUs.

First, this study holds significance for HBCU administrators, educators, and policymakers. The findings may provide valuable insights into the role of peer groups in fostering a sense of belonging and social integration among Black male students. By understanding the impact of peer groups within the HBCU context, institutions may develop targeted interventions and support systems to enhance the experiences and retention rates of Black males, ultimately contributing to their academic success and graduation.

Second, the study is significant for the Black male student population at HBCUs. By exploring how peer groups, such as the *Aristocrat of Bands* program, contribute to their sense of belonging and socialization, the research may highlight the importance of supportive peer networks in their educational journey. This understanding can empower Black male students to seek out and engage with peer groups that promote positive academic and social experiences, potentially leading to increased retention, persistence, and overall success.

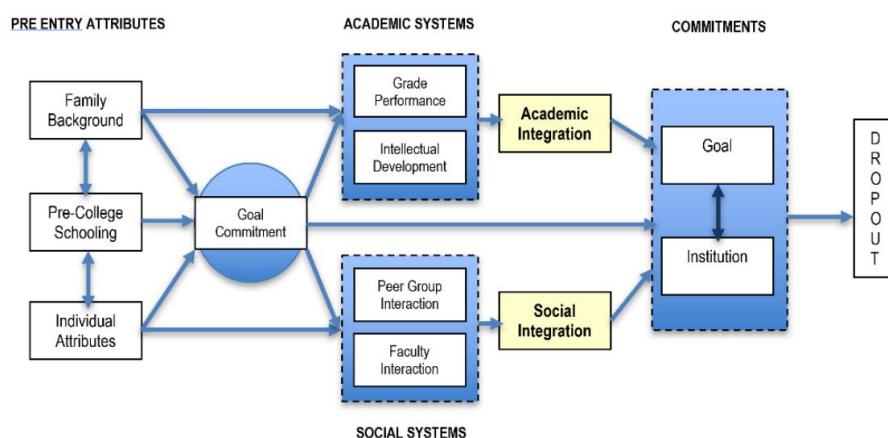
Furthermore, the study's significance extends to the broader field of higher education research. By examining the influence of peer groups on the experiences of Black males at HBCUs, the study contributes to the existing body of knowledge on factors impacting the success and retention of underrepresented student populations. The findings may inform future research on peer dynamics, sense of belonging, and student support mechanisms, not only at HBCUs but also within diverse higher education contexts.

Overall, this study's significance lies in its potential to inform institutional practices, promote academic success and retention of Black males at HBCUs, and contribute to the broader understanding of factors influencing the educational experiences and outcomes of underrepresented student populations in higher education.

Theoretical Framework: Tinto's Theory of Involvement and Student Departure

According to Vincent Tinto, the theorist credited with developing the most comprehensive theoretical model of persistence and withdrawal behavior (1975, 1987), higher education institutions are made up of distinct social and academic systems. Integration into these systems, which reflects a student's judgement of *fit* within the new environment, represents perceptions on the part of the student of shared values and support in the college community. See Figure 1. Tinto's theory seeks to explain the reasons why some college students drop out of school while others persist and graduate. The key components of the theory are the concepts of academic and social integration (the center part of Tinto's model). *Academic Integration* refers to a student's academic performance, their personal development of intellectual skills, and their satisfaction with the school's academic systems. Students who do well grade-wise and connect with faculty and staff are more integrated. *Social Integration* refers to how socially connected and involved students are in college life. Making friends, joining groups or clubs, and bonding with peers denotes higher social integration. Tinto argues that students who become more academically and socially involved in college life are less likely to drop out.

Figure 1. Tinto's Theory of Involvement and Student Departure (1975, 1987)



Other key aspects of the theory include: (a) *Pre-entry Attributes*, where students come to college with certain background characteristics and prior experiences that influence their commitment to completing college. This includes things like academic preparedness, personality traits, family background, etc.; (b) *Goals and Commitments*, where students have varying levels of commitment to the goal of college graduation and to the institution they are attending. High levels of commitment make students more likely to persist; and, (c) *The Departure Decision*, which is the result of students continually re-assessing their commitment to graduating and/or staying at the current institution. Levels of academic and social integration play a major role in these decisions. Poorly integrated students are the

most likely to drop out. In summary, Tinto argues that students who become more academically successful and socially connected are more likely to remain enrolled and persist through graduation. The theory has been very influential in higher education research.

This subjective sense of affiliation and identification with the university community is known as sense of belonging. Generally, the literature defines *Sense of Belonging* as “the experience of personal involvement in a system or environment so that persons feel themselves to be an integral part of that system or environment” (Hagerty, Lynch-Sauer, Patushy, Bouwseman, & Collier, 1992, p. 173). Defining attributes of *sense of belonging* are believed to be *fit* and *valued involvement* (Hagerty, Lynch-Sauer, Patushy, Bouwseman, & Collier, 1992). Fit refers to the perceptions that one’s values or characteristics are congruent with others, and valued involvement refers to the perception that one is valued, needed, or important to others (Hagerty, Williams, Coyne, & Early, 1996).

Research Questions

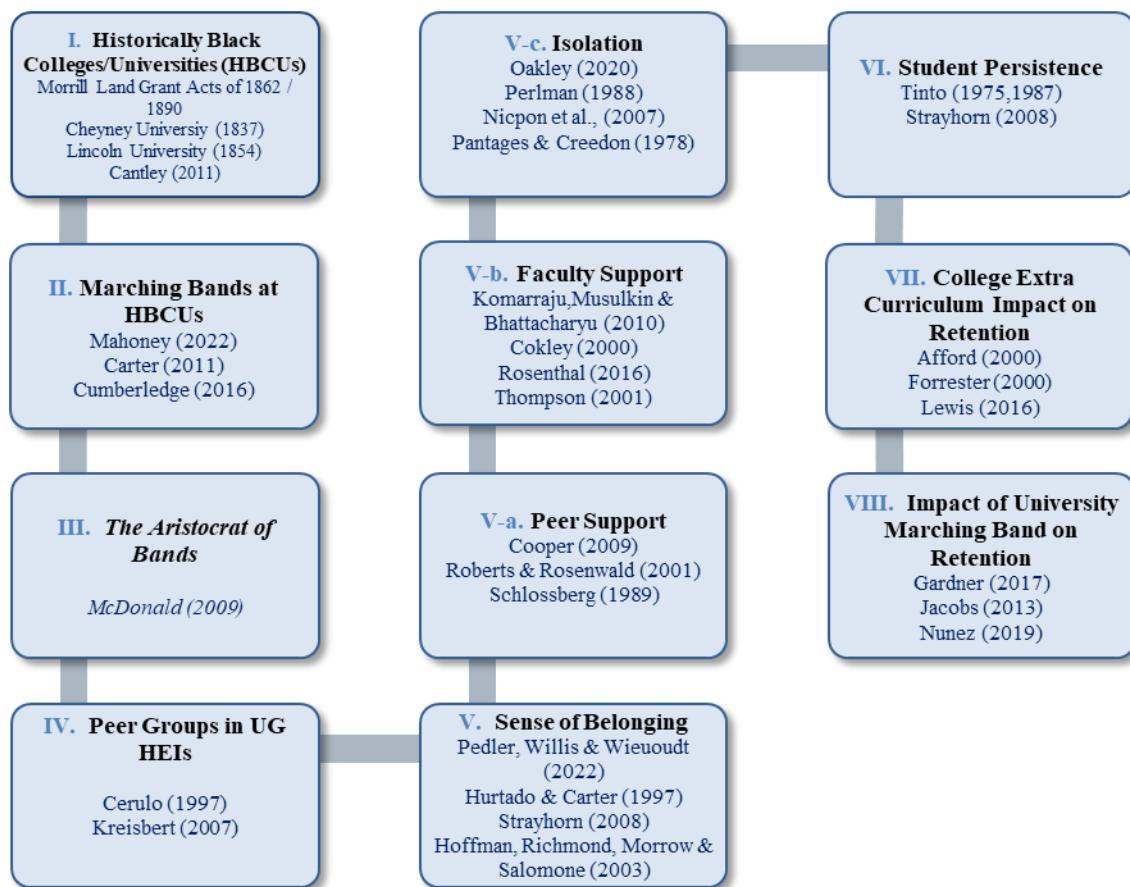
Four research questions framed this study:

1. How does participation in the university marching band impact Black male students' perception of belonging and community?
2. What aspects of the marching band experience most significantly contribute to Black male students' feelings of acceptance and value at the university?
3. How does marching band participation influence Black male students' decisions to remain enrolled at the university?
4. What recommendations should higher education administrators consider in support of Black males' sense of belonging through learning community as a marching band?

Literature Review

The literature review for this research aimed to provide a comprehensive understanding of the impact of peer groups on the sense of belonging of Black males attending a Historically Black College/University (HBCU). By synthesizing existing literature, this review contributed to the existing body of knowledge and inform future research and practice in the field. The review of literature included topics on (a) Historically Black Colleges and Universities (HBCUs), (b) Marching Bands at HBCUs, (c) The *Aristocrat of Bands* at Tennessee State University (TSU), (d) Peer Groups in Undergraduate (UG) Higher Education Institutions (HEIs), (e) Sense of Belonging, (f) Student Persistence, (g) College Extra Curriculum on Retention, and (h) Impact of University Marching Band on Retention. See Figure 2.

Figure 2. Outline of Literature Review



Historically Black Colleges and Universities

Historically Black Colleges and Universities (HBCUs) have played a crucial role in expanding access to higher education for Blacks, particularly during the era of legalized segregation when Black students were systematically excluded from predominantly White institutions (Ebright, 2019). The establishment of the first HBCUs in the early to mid-19th century, such as Cheyney University (1837) and Lincoln University (1854), aimed to provide education to freed Blacks and were supported by religious missionary groups and philanthropy (Evans et al., 2002).

The Morrill Land Grant Acts of 1862 and 1890 marked an important milestone for public HBCUs by allocating federal funds to establish public colleges focused on agriculture, science, and engineering (Cantley, 2011). This act led to the founding of public HBCUs like Alcorn State University and Prairie View A&M, although these institutions often faced inadequate funding compared to their White counterparts (Evans et al., 2002). Nevertheless, land-grant HBCUs made significant strides in making higher education accessible for Blacks in fields related to agricultural science and teaching in the late 19th century (Brown, 2020).

Private HBCUs saw a surge in establishment during the early 20th century, exemplified by institutions like Morehouse College and Spelman College in Atlanta

(Turner, 2015). These private Black colleges, supported by philanthropic organizations like the United Negro College Fund, became important centers for liberal arts education for an emerging Black middle class (Gasman, 2007). HBCUs experienced further growth after World War II when federal policies, such as the GI Bill, contributed to increased Black enrollment. By the mid-1960s, there were over 100 operating HBCUs (Evans et al., 2002). Currently, there are 107 HBCUs in the United States.

Marching Bands at Historically Black Colleges and Universities

Marching bands have a rich history and hold a special place in the traditions of Historically Black Colleges and Universities (HBCUs). As discussed by Mahoney (2022), HBCU marching band performances seamlessly blend music and dance, reclaiming Black joy, community, and self-expression. The roots of these bands can be traced back to the late 19th century when early Black college bands faced resource limitations but became a source of pride and unity (Milburn, 2022). At the present time, there are 40 HBCUs with marching bands.

Today, famous HBCU marching bands like Florida A&M's *Marching 100* and Southern University's *Human Jukebox* not only entertain sports fans but also serve as ambassadors, promoting their schools and highlighting HBCU culture (Carter, 2013). Essoka (2014) highlights how these bands invigorate campus life and convey an empowering message through their themes of "representation, excellence, and pride."

Beyond their performances at football games, HBCU bands open their rehearsals to community members and participate in battles of the bands events both on and off campus (Carter, 2013). Milburn (2022) explains that their distinctive musical and performative styles are characterized by intense section rivalries and creative drumlines. Researchers have also delved into specific traditions within these bands, such as the call-and-response interaction between drum majors and the band (Carter, 2013).

Participating in HBCU marching bands can deeply influence students' identities and experiences. Carter (2013) conducted life history interviews with gay Black male band members, revealing a sense of inclusion, racial pride, and increased confidence. However, these spaces also uphold certain heteronormative expectations regarding masculinity, sexuality, and hazing rituals (Carter, 2013).

Early HBCU Bands

HBCUs have played a vital role in the education and advancement of Black Americans in music since their establishment after the Civil War. These institutions were pioneers in establishing collegiate band programs specifically for Black students (Smith, 1976). Between 1860 and 1900, more than 60 HBCUs were founded, many of which included instrumental music offerings and bands.

During their early years, most HBCU bands relied on volunteer efforts, facing limited resources and support. Student leaders often took on the responsibility of directing these bands, as dedicated faculty positions for band directors were not yet

established (Smith, 1976). Lincoln University in Pennsylvania can be recognized as one of the earliest collegiate bands, existing as early as 1842, although not continuously (McCarrell, 1970).

Other early bands include those at Alabama A&M, established in the late 1890s, and Florida A&M, formed in the early 1900s. Despite facing various challenges and disparities in resources and support, these early HBCU bands provided invaluable musical training and experiences for many aspiring musicians (Smith, 1976). Their development laid the foundation for a tradition of instrumental music education within HBCUs that perseveres to this day.

The Aristocrat of Bands

The *Aristocrat of Bands* is a high-stepping, show-style marching band from the HBCU Tennessee State University in Nashville, Tennessee. The band's name is commonly abbreviated to the moniker, "AOB." The band is known for playing a variety of music such as jazz, classical, contemporary, and popular pieces, and is heralded for its distinct musical style using clean articulation, expressive dynamics, balance, and technical ability. Tennessee State University athletics is an Ohio Valley Conference member institution.

Dr. Reginald A. McDonald has served as the Director of Bands at Tennessee State University since 2014 after being hired as Associate Director of Bands and Assistant Professor of Music in 2006. By this time, the Director of Bands, Professor Edward L. Graves, chronicled a historical overview of this not one-time, but two-time Grammy award-winning marching band for his dissertation entitled *The Aristocrat of Bands: A Historical Investigation of the Tennessee State University Instrumental Music Program and Its Directors*, 2009.

McDonald begins his research from the perspective of what most would be familiar with the current mainstay band ensemble. In the fall of 1946, after six weeks of practice, a 100-piece marching band took to the field at Tennessee State University (TSU) and a tradition of excellence was born. The idea for a show band at TSU originated with its second president, the late Dr. Walter S. Davis. President Davis selected J. D. Chavis to serve as the first band director. Under Chavis' leadership, the marching band grew and developed into a premier university band that gave spectacular performances in parades and half-time shows at football games.

Students who achieve membership in *The Aristocrat of Bands* adhere to high standards today. Noted as one of the finest and most spectacular university bands in the United States, the *Aristocrats* are the featured attraction during pre-game and half-time performances at all home games and at most out of town competitions.

Still in demand for halftime performances, parades, and other special events, the bands' special appearances include a spot in the 1981 CBS television movie *The Concrete Cowboy*, a 1982 ad for WSMV, Nashville's NBC affiliate, a 1984 performance at the *Mirage Bowl* football game in Tokyo, Japan, and a performance at Disney World. The band would later return to Washington, D.C. in 1993 and 1997 for the Inaugural Parades of President Bill Clinton.

Dr. McDonald has assembled a well-seasoned group of creative assistant directors, along with his entire staff of professionals, the AOB has kept its rich tradition going taking it to unimaginable heights recently with making history again as the first college marching band to play the legendary Grand Ole Opry. The showmanship of the Drum Majors known as the *Fantastic Four*, the majorettes, now called the *Sophisticated Ladies*, and the *Royal Elegance*, Flag Corp Auxiliary has been the enhancements that the dynamic sounds and style of their *community* better known as the *Aristocrat of Bands*.

Peer Groups in Undergraduate Higher Education Institutions

When considering the issue of student success and its relationship to student engagement, one may wonder why students do or do not choose to get involved in their campus communities. Students consider their identity. In addition to considering self, however, it is also useful to consider the notion of *collective identity*. Collective identity refers to the elements of identity related to belonging to a particular group or social category (Cerulo, 1997; Kreisberg, 2007).

Sense of Belonging

A sense of belonging is important as it incorporates feelings of being valued, included, and accepted by peers groups and friends at a university or college setting. Research suggests that higher education students who have a deeper understanding a sense of belonging tend to have a higher motivation, more academic self-control and confidence, and higher levels of academic engagement and achievement (Pedler, Willis, & Nieuwoudt, 2022). From their research they developed a questionnaire to explore the relationships between university students' sense of belonging and student retention. They found a significant difference in the level of belonging between first-generation students and students whose parents had both completed university. Additionally, students who frequently considered leaving university without completing their degree (i.e., dropping out) had a significantly lower sense of belonging than students who did not.

When considering both the Armstrong (2019) and Carter (2013) studies, both offer valuable perspectives on the experiences of Black male students in campus organizations at HBCUs. Armstrong's (2019) focus is on Black Greek letter fraternities (BGLFs), while Carter (2013) examines the role of HBCU marching bands.

A key similarity between the studies is their exploration of how participation in these student groups influences the development of racial and masculine identities. Armstrong's research reveals that membership in BGLFs fosters an enhanced sense of Black consciousness, solidarity, and connection to Black history among the interviewed men. Similarly, Carter demonstrates how the supportive environment of HBCU bands nurtures racial pride and confidence in one's *Blackness*, particularly among gay band members.

However, there are notable differences in their findings. While Armstrong highlights the masculine socialization process within BGLFs, Carter uncovers the complexities of gender and sexual identity negotiations within HBCU bands. Band

members, particularly those who identified as Black gay men, experienced both inclusion and pressure to conform to masculine heteronormative expectations. Carter's research also reveals the prevalence of competitive hazing rituals within the band setting, which contrasts with the structured mentorship approach reported by Armstrong.

Methodologically, both studies employed qualitative inquiry, but Armstrong utilized a basic interpretative approach, whereas Carter relied on life history interviews. Armstrong's study focused specifically on the perspectives of BGLF members, while Carter explored the intersectionality of identities, encompassing race, gender, and sexuality, within the band context.

In summary, these two research studies employed complementary insights. Armstrong shed light on the perceived advantages of BGLF membership at HBCUs, while Carter offered a more critical analysis that uncovered both positive and negative aspects of the marching band experience. Together, these studies illustrated the profound impact that student organizations exert on the formation of identity and socialization processes among Black male students at HBCUs. They also highlighted the importance of further research to promote inclusion and support for diverse identities within these traditionally Black spaces.

In addition, university students with a higher sense of belonging reported higher motivation and enjoyment in their studies whereas students who reported lower levels of belonging reported lower levels of motivation and enjoyment in their studies, which can impact on student achievement and reduces the likelihood of students considering leaving university before completing their studies, thus contributing to student retention. More specifically, previous studies have found that sense of belonging for students of color is linked to persistence (Hausmann, Schofield, & Woods, 2007; Hurtado & Carter, 1997; Strayhorn, 2008).

Perceived Peer Support

When considering the issue of student success and its relationship to student engagement, issues arise concerning why students do or do not choose to get involved in their campus activities or communities. This concern relates to how students perceive themselves and construct their identities as college students (Cooper, 2009). Cooper goes on to explain,

In order to persist in their education, however, all students need to feel they are in a campus community that supports and values them, where learning opportunities are developmental, and where they feel a strong sense of identity and affinity with the school. This feeling that they are cared about and seen as part of the campus community is tied to students' sense of belonging; this feeling in turn is tied to student persistence (2009, p. 1).

This sense of belonging has been referred to as "embeddedness" (Roberts and Rosenwald, 2001, p. 112) and has also been associated with "mattering" (Schlossberg, 1989). One of the key factors to consider in creating and fostering a sense of belonging for students is that of campus culture. Peers are instrumental in influencing college outcomes because students can work together to form study

groups, share notes, and experiences, and offer advice and support (Richardson & Skinner, 1992).

Similarly, research on living communities shows positive retention outcomes. For example, in 2011, Buch and Spaulding studied the impact of a psychology learning community with six groups of students. The students were required to complete common courses, a service-learning project, and they were exposed to academic support resources on campus. When compared to their non-learning community peers, they received higher GPAs, earned more credit hours, and had a higher first-year retention rate.

Perceived Faculty Support

Student-faculty interactions can be critical in developing students' academic and social self-concept and enhancing their motivation and achievement. Colleges and universities that actively nurture close and frequent contact between their students and faculty members are more likely to gain many benefits from such initiatives (Komarraju, Musulkin, & Bhattacharyu, 2010). Faculty members taking an interest in their students' academic progress could potentially make significant contributions in increasing their intellectual and professional development (Anaya & Cole, 2001; Chickering, 1969; Chickering & Reisser, 1993; Cokley, 2000; Terenzini & Pascarella, 1980).

There is evidence that students successful in knowing even one faculty member on a close level are likely to feel more satisfied with their college experience and aspire to go further in their careers (Rosenthal et al., 2000). Although most faculty interactions tend to occur within the formal classroom environment, students who experience informal interactions tend to be more motivated, engaged, and actively involved in the learning process (Thompson, 2001; Woodside, Wong, & Weist, 1999). In fact, informal interaction between students and faculty has been identified as a primary agent of college culture and has an important influence and role on the attitudes, interests, and values of college students (Chickering & Reisser, 1993; Lambert, Terenzini, & Lattuca, 2007; Pascarella, 1980; Pascarella & Terenzini, 1991, 2005; Thompson, 2001).

Although previous research has established that student-faculty interactions are important, this research identifies which aspects of student-faculty interactions are helpful and how these could significantly influence students to stay in college, increase their desire to work hard, stimulate them to enjoy learning, and encourage them to strive toward high achievement (Bean, 1985).

Perceived Isolation and Loneliness

According to Lee Oakley (2020):

Loneliness is one of the most personal, and ironically one of the most social, feelings that a person can experience. It is something which affects our sense of who we are, and our place in the society in which we inhabit. It affects some for only brief moments, and still others their entire lives. It is human universal which everyone is likely to have experienced, however briefly, at one point or another in their lives. Many scholars have variably defined this phenomenon over the years as an emotion, a feeling, a perception or even as a biological mechanism for survival (p. 1).

What this tells us is that loneliness is a complex process which many individuals have reflected on in many different ways.

Loneliness has been defined as an unpleasant and distressing subjective experience that arises from a qualitative or quantitative deficiency in a person's relationships (Perlman, 1988). It can vary in intensity and frequency (Russell, 1982) and has been associated with many negative consequences, such as reduced life satisfaction (Goodwin, Cook, & Yung, 2001), decreased academic performance and persistence (Nicpon et al., 2007), and psychological distress (DiTommaso & Spinner, 1997).

Changes and transitions are common for everyone throughout life. There is a growing body of research suggesting that attending higher education, especially for the first time, entails a transition in young adults' lives which includes a great deal of stress (Wintre & Yaffe, 2000). It was suggested that these difficulties might be so serious, that up to 40% of the students may fail to complete their degrees (Pantages & Creedon, 1978). Estimates indicate that as many as 30% of college students reported experiencing loneliness and up to 60% experienced it as a major problem during their college years (McWhirter, 1997). In a study conducted by Bernardon, Babb, Hakim-Larson, & Gragg, 2011), results indicated that participants with greater attachment security reported lower levels of all types of loneliness compared to those with less attachment security, and this was partially mediated by perceived social support.

Student Persistence

It is often believed that students are more likely to persist if they immediately get involved, engaged, or integrated into college life (Astin, 1985; Pascarella & Terenzini, 2005; Tinto, 1993). Involvement is defined by Astin (1985) as the extent to which students invest in learning by studying, spending time on campus, participating in student organizations, and interacting with faculty and other students. Astin's definition of involvement is closely related to Tinto's (1993) concept of integration, which suggests that students are more likely to persist when they perceive congruence between their intellectual and social needs at an institution. Simply put, increasing students' level of involvement in an institution was directly linked to student development and success (Astin, 1985). This congruence, which has been referred to as academic and social integration, has been defined by Tinto (1993) as the student's level of involvement in the social and academic life of the college.

Sense of Belonging and Persistence in College

The research shows that “a sense of belonging is an influential factor in whether a student succeeds and develops in college” (Hamrick, Evans, and Schuh, 2002, p. 86). Tinto’ Theory Student Departure (1987, 1993) focuses primarily on the critical importance of social and academic integration into college for student success and persistence. His theory has been widely adopted by many Higher Education Institutions (HEIs) and propels many of the programs and services provided for the students (Tierney, 1992). Tinto (2006, 2007) recognized that there was a disconnect on factors that supported student persistence and the lack of improvement in student retention rates, especially for at-risk students.

Braxton and Lee (2005) did an exhaustive review of the research on student persistence and found that there was a link between social integration, institutional commitment, and a student’s decision to persist at a four-year residential institution. Out of the nineteen studies they reviewed, sixteen supported the fact that students were more likely to be committed to the institution and persist to graduation if they experience social integration (Braxton & Lee, 2005). Moreover, Pascarella and Ternzini (2005) concluded from their research on engagement and persistence that student engagement, purposeful campus involvement, positive interactions with faculty, and time spent studying outside of the class were all strongly related to persistence and graduation. Reason (2009) supported those findings in an extensive review of the retention research, finding that involvement in co-curricular activities (i.e., student organizations, fraternities, marching bands, campus groups) helped students gain experiences with purposeful activities that could lead to retention.

Previous research investigated sense of belonging, motivation, and persistence using quantitative methods (Freeman, Anderman, & Jenson, 2007; Morrow & Akermann, 2012). Freeman, Anderman, and Jenson (2007) studied the sense of belonging with a group of college freshmen. The purpose of that study was to examine the relationship between the students’ sense of class belonging and their academic motivation. Two hundred thirty-eight participants were surveyed at a southern university, and it was found that there was a relationship between the students’ feeling of belonging in class and their level of academic motivation. Moreover, students who felt a connection to their classes felt a great sense of belonging within the university community (Freeman et al., 2007).

Morrow and Ackermann (2012) also examined sense of belonging of first-year college student to assess the importance of sense of belonging and motivation in predicting persistence from the first year to the second year. One hundred fifty-six students completed the survey. The overall finding for sense of belonging and intent to persist were not significant; however, faculty and peer support were significant in predicting first- to second-year retention.

Research conducted on sense of belonging by race has determined that Black and Hispanic students seek membership in peer groups as a way to feel a part of the campus community (Carter & Hurtado, 2007; Strayhorn, 2008). Carter and Hurtado (2007) studied the experiences of first-year Latino students, seeking to discover how racial and ethnic minority students viewed their participation in

college in relation to the process of engagement in diverse learning communities of a college. Findings from this study were consistent with those of Ingelmo (2007), who studied the perception of belonging of six Hispanic students at a predominantly White institution (PWI) in the Midwest and found that establishing a sense of belonging was difficult for students who did not fit in with the dominant campus population. Sense of belonging was established by creating relationships within the community and organization with members who shared the same values and experiences.

Museus, Yi, and Saelua (2017) sought to generate a clearer understanding of how campus environments influenced a sense of belonging. They were interested in determining whether culturally engaging campus activities were related with students' sense of belonging. They found that Hispanics show a stronger sense of belonging than Whites, and women exhibited a stronger sense of belonging than men. Additional research has been conducted regarding first-year student persistence by race and social class. Hausman, Schofield, and Woods (2012) studied sense of belonging as a predictor of persistence in Black and White first-year students. The purpose of their study was to examine the role of sense of belonging in predicting college students' intention to persist. The study found that students who had regular interactions with their peers, interacted with faculty, had support from their friends, and had support from their family had a greater sense of belonging.

College Extra Curriculum Impact on Retention

The link between student involvement and retention has been firmly established. Tinto (1975) was among the first to emphasize how social and academic integration impacted a student's commitment to their institution and decision to persist in college or withdraw. Subsequent research has consistently found significant positive correlations between participation in extracurricular activities and student retention rates (Alford, 2000; Astin, 1984; Bower, 2003; Nunez & Cuccaro-Alamin, 1998). Students who engaged socially and educationally beyond the classroom were more likely to continue into their second year and beyond.

Involvement in specific activity types also showed benefits. Participation in club or intramural sports had high impact, particularly for marginalized student populations by developing leadership skills, social networks and support systems (Forrester, 2006; Greive, 2016). Involvement in performing ensembles increased a sense of belonging and meaningful connections to peers which supported retention (Wolf-Wendel et al., 2003). Membership in campus organizations led to strengthened institutional commitment through shared school spirit traditions and community (Kuh, 1995; Lewis, 2016). Even employment on campus in positions that were socially enriching, such as resident advising roles, positively influenced persistence (Purdie & Rosser, 2011).

However, some discrepancies persisted for underrepresented groups. While involvement was generally linked to higher retention across race, Black and Latino students reported lower retention rates than White students in multiple studies (Murtaugh et al., 1999; Wolf-Wendel et al., 2009). Fischer (2007) found small effects favoring White students involved in honors programs and experiential learning trips. Research aimed at understanding gaps is still developing but beginning to consider

intersectional identities and varied experiences (Tull et al., 2021). Schlossberg (1989) emphasized the need to tailor supports and create welcoming communities for all, especially those with marginalized social identities.

There are also opportunities to explore specific types of activities in more depth. While performing groups are well-studied, less is known about other creative outlets like campus media, visual and performing arts clubs. The impact of academic and pre-professional organizations is under-researched as is involvement through religious and spirituality groups which are significant for some students. Further, most studies utilize quantitative methods, yet qualitative inquiries could provide richer insights into how various experiences are perceived and shaped by individual contexts and social locations. Tinto (2012) later asserted models must consider external factors beyond the institution that influence student commitment and success.

The literature clearly demonstrates participation in extracurricular activities benefits retention overall, but key gaps remain regarding differences across student demographics. Filling these voids could aid in developing more inclusive and targeted involvement initiatives proven to support retention, especially for marginalized populations at risk for lower persistence. This proposed study seeks to address some of these gaps through a mixed methods exploration of diverse involvement experiences and outcomes among first-year students across racial and ethnic backgrounds.

Impact of University Marching Band and Retention

Research has found that participation in university marching bands positively impacts retention. Studies show that members of marching bands are more likely to persist into their second year of college compared to non-band students (Goodrich, 2018; Lowman, 2020). This is likely due to the increased sense of belonging and community that marching bands can provide. Tinto's (1975) theory of student departure emphasizes that feeling connected to the campus environment is key in retention.

Several factors associated with the marching band experience may foster this sense of belonging. Marching bands require significant time commitments for rehearsals, performances, and traveling that promote bonding between members (Cooper et al., 2007; Kim & Jin, 2020). Members develop close peer relationships that serve as a strong support system (Gardner, 2017). The visible leadership roles and responsibilities students hold within the band also provide an avenue to find purpose and feel important on campus (Jacobs, 2013; Lowman, 2020). Performing at high-profile sporting events in front of large crowds further bolsters pride in one's university (Adderly et al., 2019).

Despite research showing marching bands may boost retention overall, there is limited research on potential differences across demographic groups. One study found that involvement in campus activities such as marching band had an even stronger positive relationship with retention for minoritized students compared to White students (Nuñez, 2009). However, more examination is still needed on diversity within bands and the experiences of students with marginalized identities. Qualitative approaches could provide a deeper understanding of whether and how membership uniquely impacts belonging and commitment to school among different populations.

The sense of connection and support that marching bands help foster appears to encourage students to persist in their education. The regular contact hours spent in marching band activities serve to integrate members into the social and academic realms of campus life that Tinto argued were crucial for retention. While gaps remain regarding disaggregated data, research has generally found positive connections between participation and continued enrollment into the second year of college and degree completion. Further study across student identities could help marching band directors optimize their programs' recruitment and sense of inclusion.

Development of Leadership Skills

In the expansive landscape of higher education, delving into the intricate dynamics of leadership skill development illuminates a narrative deeply embedded in the experiences of Black males at HBCUs. This literature review aspires to synthesize existing research, contributing to a nuanced understanding of how participation in peer groups and organizations, particularly within the unique context of HBCUs, significantly shapes the cultivation of leadership qualities. By navigating through this body of knowledge, the review aims to inform future research and practice, offering insights and recommendations for administrators, policymakers, and stakeholders.

The Imperative of Leadership Development

Komives, Lucas, and McMahon's seminal work (2013) serves as a guiding compass in understanding leadership development in college. Their exploration of leadership as a dynamic process highlights the transformative potential embedded in extracurricular involvement, encouraging students to actively engage in leadership roles within peer groups. Dugan and Komives' compilation (2010) further expands the discourse, presenting a collection of essays that delve into the multifaceted dimensions of leadership development.

Tailoring Leadership Development to College Contexts

Harper and Quaye's research (2007) on student organizations as venues for Black identity expression and development among Black male student leaders sheds light on the specific experiences of Black male students. Gasman, Baez, Turner, and Trujillo's (2008) work contributes to this exploration by emphasizing the unique environments of minority-serving institutions, including HBCUs, as fertile grounds for leadership development among a diverse student body.

The HBCU Context: A Catalyst for Leadership

The unique cultural and social milieu of HBCUs introduces an additional layer to the development of leadership skills. Gasman and Drezner's (2014) theoretical exploration lays the groundwork for comprehending the intricacies of leadership

development within these institutions, recognizing the historical and cultural significance of HBCUs. Palmer, Maramba, and Gasman's (2011) exploration enriches our understanding of how HBCUs contribute to the development of leadership skills among Black male students.

Leadership Beyond the College Gates

As students traverse the corridors of higher education, the development of leadership skills holds implications that extend far beyond the college experience. Posner's (2017) renowned work offers practical insights into leadership principles applicable in various contexts, including the workplace. Northouse's (2018) comprehensive text serves as a guide for understanding leadership within diverse contexts, emphasizing the dynamic and adaptable nature of leadership.

The literature on the development of leadership skills within the context of higher education paints a vibrant portrait of the transformative potential inherent in extracurricular involvement. The dynamic interplay between peer group participation, identity development, and the unique environments of HBCUs shapes a narrative that extends beyond the confines of traditional leadership models. The current study, centered on the impact of marching band participation on leadership development among Black male students at an HBCU in the Midsouth, seeks to add a nuanced layer to this discourse. By building upon these scholarly insights, the study aspires to contribute to the development of tailored interventions and strategies, fostering the leadership potential of Black male students in higher education and beyond.

The Intricacies of Motivation

Hurtado, Carter, and Spuler's investigation (1996) into the transition experiences of Latino students offers profound insights into the challenges and triumphs that shape motivation to persist in higher education. Their work serves as a cornerstone in understanding how early stages of the college journey influence students' commitment to their academic pursuits. Pascarella and Terenzini's (2005) longitudinal research enriches our comprehension of the complex nature of student motivation, emphasizing the lasting impact of early engagement on students' motivation to return to school.

Specific Challenges and Retention Dynamics

Allen's exploration (1992) into the outcomes for Black students provides a nuanced perspective on the specific challenges faced by underrepresented groups. Fries-Britt and Turner's (2001) work on *Uneven Stories* adds depth by presenting narratives of successful Black collegians, displaying the diversity of experiences and emphasizing the need for tailored interventions to foster sustained motivation to return to school.

Tailoring Interventions for Underrepresented Groups

Harper's (2012) comprehensive research sheds light on the unique challenges faced by Black male students, urging institutions to recognize and address systemic barriers. His work challenges prevailing narratives and underscores the importance of acknowledging individual needs to cultivate sustained motivation among this demographic.

Leadership in the Workplace

Within the expansive realm of higher education, the cultivation of leadership skills stands as a pivotal element shaping individuals for success in the professional landscape. This journey from academic development to professional leadership involves a nuanced interplay between the college experience, particularly within the distinctive context of HBCUs, and the subsequent application of learned skills in diverse workplaces.

Foundational Significance of Belonging

Hausmann, Schofield, and Woods' research (2007) accentuates the foundational significance of a sense of belonging for students in higher education. This transcendent concept encompasses not only social connections but also a perception of support, significance, and integration within the campus community. Strayhorn's seminal work (2012) adds layers to this understanding, emphasizing the transformative role a strong sense of belonging plays in shaping an individual's identity and worldview.

Challenges Faced by Underrepresented Groups

For underrepresented groups, particularly Black males, the pursuit of a sense of belonging becomes a distinctive journey. Harper's (2012) comprehensive research illuminates the unique challenges faced by Black male students in higher education, underscoring the intersectionality of race and gender. Recognizing and addressing these challenges is pivotal for crafting interventions tailored to the diverse experiences within the student body.

Summary of Literature Review

The literature reviewed provides strong evidence that involvement in university marching bands can positively impact retention and sense of belonging for students. The close-knit communities and time commitments associated with band membership appear to facilitate the social and academic integration emphasized in Tinto's model as key to student persistence. However, more comprehensive exploration is still needed to fully understand potential variations in these outcomes based on student demographics. Given marching bands' prevalence on college campuses and their visible leadership roles representing university spirit, further research disaggregating retention data and exploring diverse student experiences could yield valuable insights for enhancing bands' inclusive excellence and support of all members.

The literature on sense of belonging in higher education provides a rich tapestry of insights into the complexities of student experiences. Understanding the dynamic interplay among peer group participation, identity development, and the unique environment of HBCUs lays the groundwork for the current study. Centered on exploring the impact of marching band participation on the sense of belonging among Black male students at an HBCU in the Midsouth, this study aspires to build upon this scholarly foundation, offering nuanced insights and recommendations for enhancing the sense of belonging and overall success of Black males in higher education.

Methodology

The purpose of this study was to examine the impact of peer groups on the experience of undergraduate Black males attending Historically Black College and Universities (HBCUs) in the Midsouth. The study aimed to explore the sense of belonging and socialization skills of these students within their peer groups and investigate how these factors contributed to their retention and success at the HBCU. This section describes the study's research design, the target population, the instrumentation, the data collection procedures, and the data analysis techniques to answer the study's research questions.

Research Design

This study employed a sequential mixed-methods study and was conducted in two phases to investigate how university marching band participation impacts Black male students' sense of belonging (i.e., peer support, faculty support, isolation, and classroom comfort). Phase I was a quantitative portion, and Phase II was a qualitative portion.

Phase I (Quantitative)

An online survey was administered to approximately 80 current members of the university marching band. The pre-existing survey utilized a five-point Likert scale to measure (a) perceptions of sense of belonging (on four scales), (b) intentions to remain enrolled, and (c) demographic information.

Phase II (Qualitative)

A focus group was conducted with a purposeful sample of seven Black male band members and several band staff members. The focus group was conducted with participant consent and was about 60 minutes in duration. The session was conducted through Zoom and was audio recorded, and transcripts were auto generated. A semi-structured protocol guided discussion was conducted exploring topics of sense of belonging, university engagement, social supports, and impacts of band involvement.

Target Population

Approximately 80 Black undergraduate male student marching band members currently attending an HBCU were invited to participate in this study. Marching band staff members were also invited to participate in a focus group session.

Instrumentation

Two forms of data were used for this study: (a) an online questionnaire and (b) a focus group protocol. These data collection instruments are each described in the sections that follow.

The Sense of Belonging Scale - Revised

The survey used in this study was *The Sense of Belonging Scale – Revised* (Hoffman, Richmond, Morrow, & Salomone, 2003). See Appendix A. The researcher had permission from the author to use the survey for this study. The survey with consent form was housed on the QualtricsTM server.

The 26-item questionnaire was designed to measure the degree Sense of Belonging on four dimensions: Perceived Peer Support (eight items), Perceived Classroom Comfort (4 items), Perceived Isolation (4 items), and Perceived Faculty Support (10 items). Respondents were asked to answer questions on a five-point Likert scale: 1=completely untrue, 2=mostly untrue; 3=equally true and untrue, 4=mostly true, 5=completely true. Each factor scored is the arithmetic mean of the items making up the scale. No answers were reverse scored. The total sense of belonging score is the arithmetic mean of all 26 items. Permission was received to send an email with the anonymous link to the survey to the current AOB members.

Focus Group Questions

The band member focus group questions were asked to a group of current students within a group setting. Seven students of varied classifications and a cross-reference of instrumentalists were selected for the session. The focus group session was conducted via Zoom and was recorded and transcribed. This format allowed for individuals to piggy-back off each other's responses and add to them. See Appendix B for the complete set of focus group questions and follow-up probing questions. Students were asked to volunteer to participate in the focus group by providing their name and email address at the conclusion of the online questionnaire.

All documentation, procedures, and protocols were provided by email prior to the interview. Participants were read an Informed Consent script at the start of the interview to ensure full understanding of the purpose of the study, the intent of the interview, confidentiality, and federal regulations governing human subjects' research. A verbal agreement was required and recorded before the interview questions started. In addition, the consent form, and participant's pre-qualifying questionnaire were discussed with each participant. The researcher conducted individual interviews virtually on the Zoom (web-based) platform to allow video and audio recording which were later transcribed through Otter.ai software.

Data Collection Procedures

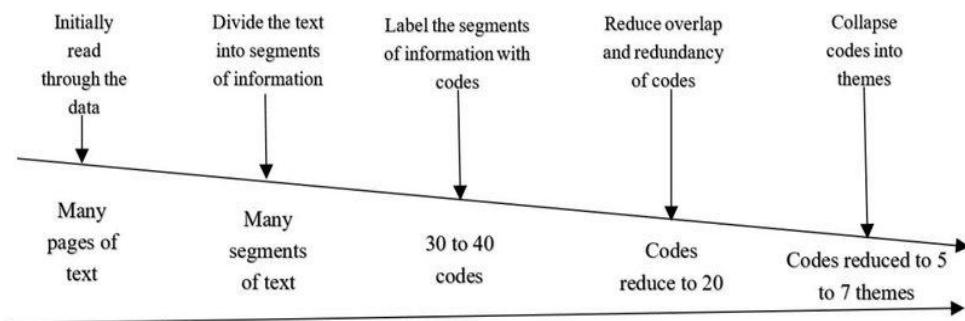
Prior to collecting any data, the researcher completed the *Collaborative Institutional Training Initiative* (CITI) Ethics in Research Modules. The researcher applied for Institutional Review Board (IRB) from Tennessee State University (TSU) approval to collect data and received approval.

A link to the *Sense of Belonging Scale-Revised* was emailed to current AOB members. An additional five questions were added to the end of the survey requesting demographic and persistence to continue in college information. The focus group session was held with a group of current AOB members. The focus group was held via ZOOM and lasted 30-45 minutes. Students were asked to volunteer to participate in the focus group session by providing their name and email address at the conclusion of the Qualtrics survey. The researcher selected a variety of class-levels and instrument players.

Data Analysis Techniques

After survey data were collected through the Qualtrics platform, data were exported into IBM SPSS, Version 29.0 and analyzed using descriptive statistics and frequencies and were displayed in tables and graphs. Focus group discussions were transcribed verbatim and were subject to thematic analysis. Text was coded, and emergent themes were identified using Creswell's (2028) *Visual Model of the Coding Process in Qualitative Research* (see Figure 2). An explanatory approach was integrated and elaborated on quantitative results with qualitative insights.

Figure 2. Visual Model of the Coding Process in Qualitative Research (Creswell, 2018)



Results

The purpose of this study was to investigate how participation in a university marching band influences Black male students' sense of belonging at their institution. Sense of belonging refers to students' perceived feelings of support, connection, and importance within their campus community. This section reports on the response rate and the characteristics of the survey respondents. Next, the results of the data analysis are presented in the order of the study's research questions.

Response Rate and Characteristics of Survey Respondents

Eighty-three (83) Black male band students were sent an email requesting participation in taking the *Sense of Belonging Scale*. Three emails were sent back undeliverable. Out of the eighty emails sent, 61 students completed the survey, with a response rate of 76%, which exceeded the 70% expectation. Table 1 displays the characteristics of the survey respondents. As seen in Table 1, all respondents were Black or bi-racial, which, besides being male, was the primary criteria for being a survey respondent. There was a fairly even distribution among the (a) classification of freshmen, sophomore, junior, and senior, (b) age, and (c) number of semesters in AOB.

Table 1. Characteristics of Survey Respondents

Characteristic		N	%
Student Classification			
	Freshman (0-30 hours)	17	27.9
	Sophomore (31-60 hours)	24	39.3
	Junior (61-90 hours)	13	21.3
	Seniors (91-120 hours)	7	9.8
	Total	61	100.0
Age			
	17	1	1.6
	18	13	22.3
	19	18	29.5
	20	16	22.6
	21	10	34.4
	22+	3	4.9
	Total	61	100.0
Ethnicity/Race			
	Bi-racial	8	13.1
	Black	53	86.9
	Total	61	100.0
Number of Semesters in AOB?			
	1	2	3.3
	2	18	29.5
	3	7	11.5
	4	18	29.5
	5	3	4.9
	6	8	13.1
	7	0	0.0
	8-10	5	8.2
	Total	61	100.0

Results of Data Analysis by Research Question

Research Question One (RQ₁): *How does participation in the university marching band impact Black male students' perception of belonging and community at the university?*

To answer RQ₁, means and standard deviations were computed for each survey item on the *Sense of Belonging Scale*. A Likert scale from one to five was used for responding to each of the survey items, with 5=completely true; 4=mostly true; 3=equally true and untrue; 2=mostly untrue; 1=completely untrue. Then, survey items # 1-8 were collapsed to create a scale for Perceived *Peer Support*; items #9-12 were collapsed to create a scale for Perceived *Classroom Comfort*; items # 13-16 were collapsed to create a scale for Perceived *Isolation*; and, items # 17-26 were collapsed to create a scale for Perceived *Faculty Support*. See Appendix C.

Next, the total scale scores for each of the four scales were disaggregated by demographic factor, specifically classification, age, and number of semesters of

participation in the AOB, to examine the impact of Sense of Belonging scale scores. See Table 2 for descriptive statistics (means).

Table 2. Means Scores for Sense of Belonging Scales by Demographic Factor

Characteristic	N	Peer Support <i>M</i> *	Classroom Comfort <i>M</i> *	Isolation <i>M</i> *	Faculty Support <i>M</i> *
Student Classification					
Freshman (0-30 hours)	17	3.98	4.49	3.34	3.97
Sophomore (31-60 hours)	24	3.92	3.83	2.89	3.51
Junior (61-90 hours)	13	4.11	4.21	2.96	3.64
Seniors (91-120 hours)	7	4.45	4.33	2.42	3.52
Total	61	4.04	4.16	2.95	3.68
Age					
17 years	1	3.75	5.00	5.00	5.00
18 years	13	3.96	4.31	3.33	3.82
19 years	18	4.07	3.92	2.78	3.64
20 years	16	4.04	4.26	3.03	3.66
21 years	10	3.99	4.05	2.73	3.47
22 years and older	3	4.50	4.58	2.08	3.73
Total	61	4.04	4.16	2.95	3.68
Number Semesters in AOB?					
1	2	3.38	3.88	3.13	3.45
2	18	4.14	4.61	3.33	4.09
3	7	4.18	3.82	2.79	3.55
4	18	3.88	3.69	2.85	3.38
5	3	4.25	4.33	2.83	4.30
6	8	3.84	4.28	2.91	3.37
7	0	0.00	0.00	0.00	0.00
8-10	5	4.45	4.55	2.25	3.60
Total	61	4.04	4.16	2.95	3.68

* 5=完全正确; 4=大部分正确; 3=真假各半; 2=大部分错误; 1=完全错误

Then, to examine the relationships among the three demographic factors (age, classification, and numbers of semesters as an AOB member) and each of the four Sense of Belonging scales (Peer Support Level, Classroom Comfort Level, Isolation Level, and Faculty Support Level) a Spearman Rho (r_s) correlational analysis for ordinal data was conducted. These results are displayed in the correlation matrix in Table 3.

Table 3. Correlation Matrix of Sense of Belonging Scales and Demographic Factors (N=61)

Spearman Rho Correlation		1 PS	2 CC	3 IS	4 FS	5 CL	6 AG	7 SM
1 Peer Support (PS)	Corr. Coeff Sig	1.00 -						
2 Classroom Comfort (CC)	Corr. Coeff Sig	.557* <.001	1.00 -					
3 Isolation (IS)	Corr. Coeff Sig	-.478* <.001	-.163 .209	1.00 -				
4 Faculty Support (FS)	Corr. Coeff Sig	.337* .010	.507* <.001	.028 .831	1.00 -			
5 Classification (CL)	Corr. Coeff Sig	.131 .320	-.082 .527	-.268* .037	-.142 .284	1.00 -		
6 Age (AG)	Corr. Coeff Sig	.039 .769	-.015 .910	-.217 .092	-.157 .236	.830** <.001	1.00 -	
7.No. of Semesters AOB (SM)	Corr. Coeff Sig	.026 .846	-.130 .319	-.223 .084	-.235 .074	.872** <.001	.763** <.001	1.00 -

*=significant at .05 alpha level; **=significant at .01 alpha level

As seen in Table 3, there are eight statistically significant correlations among the variables and sense of belonging scales. The most notable relationships are the two negative correlations involving the isolation scale. First, the relationship with the peer support scale ($r_s = -.478^*$). It is statistically significant at the .05 alpha level. This relationship suggests as peer support goes up, isolation goes down. You may also say, as peer support goes down, isolation goes up. The second statistically significant relationship with isolation is with classification ($r_s = -.268^*$). It is statistically significant at the .05 alpha level. As classification goes up, isolation goes down. This relationship suggests as the students' classification progresses up from freshman to sophomore to junior, etc., isolation goes down.

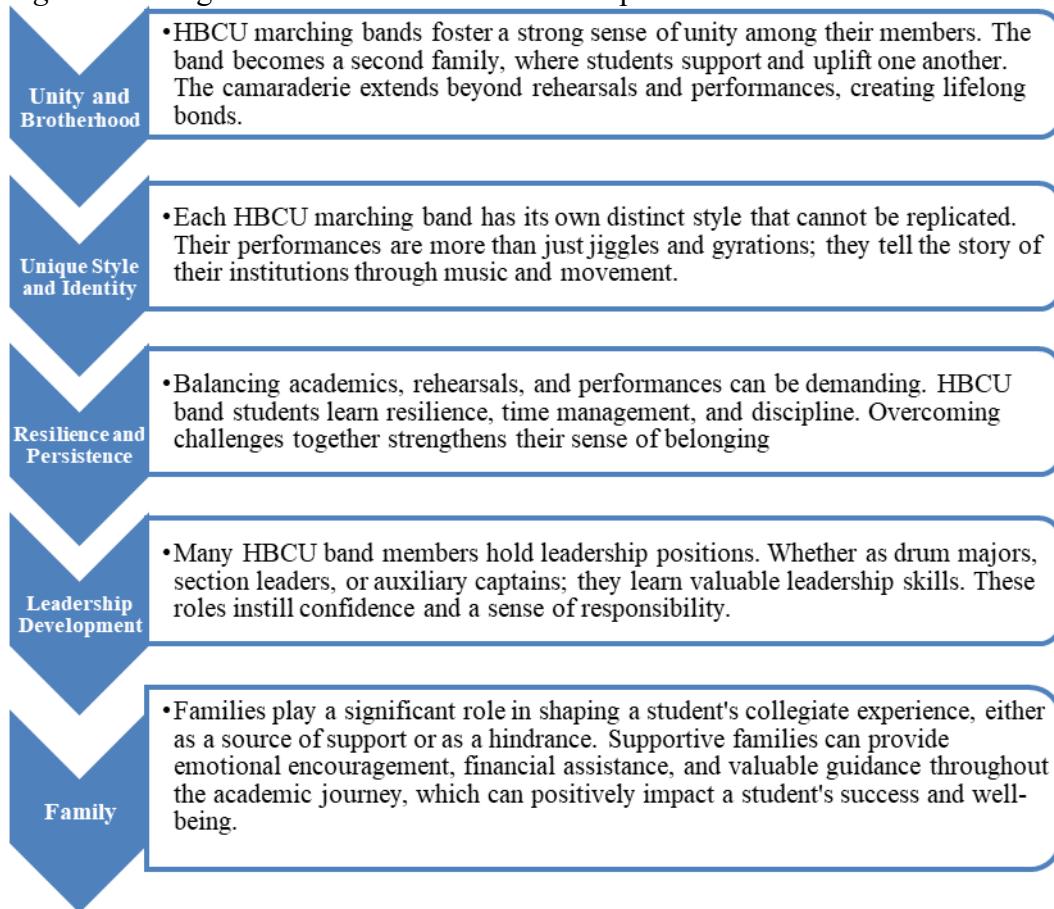
Also, as expected, there were strong positive correlations ($p < .01$) among the demographic variables of age, classification, and number of semesters participating in the AOB: age and classification ($r_s = .830$); number of semesters in AOB and classification ($r_s = .872$); age and number of semesters in AOB ($r_s = .763$).

Research Question Two (RQ₂): *What aspects of the marching band experience most significantly contribute to Black male students' feelings of acceptance and value at the university?*

To answer RQ₂, a focus group session was conducted with seven individuals. Email invitations were sent out to individuals who provided their email addresses on the questionnaire indicating that they would be willing to participate in the focus group session. The focus group protocol questions and consent form were emailed to each participant prior to the ZOOM session. See Appendix B for a list of the questions. Seven students attended the session which lasted about an hour. There were two freshmen, two sophomore, two junior, and one senior band member. There were also two associate band directors who participated in this focus group session. The session was recorded, and the interviews were transcribed. The transcripts were sent to the participants for member-checking prior to the analysis. The transcripts were then analyzed to extract themes using Creswell's (2018) *Visual Model of the Coding Process in Qualitative Research*. Refer to Figure 2.

The themes that emerged included: (a) unity and brotherhood, (b) unique style and identity, (c) leadership development, (d) resilience and perseverance, and (e) family. Each of these themes are displayed and briefly described in Figure 3.

Figure 3. Emergent Themes from the Focus Group



Research Question Three (RQ₃): *How does marching band participation influence Black male students' decisions to remain enrolled at the university?*

To answer RQ₃, responses from the last items from the survey were examined. These two items were added to the survey to provide data to help address this question:

Item #32: If you did not return to school next semester, what would be your primary reason for not returning?

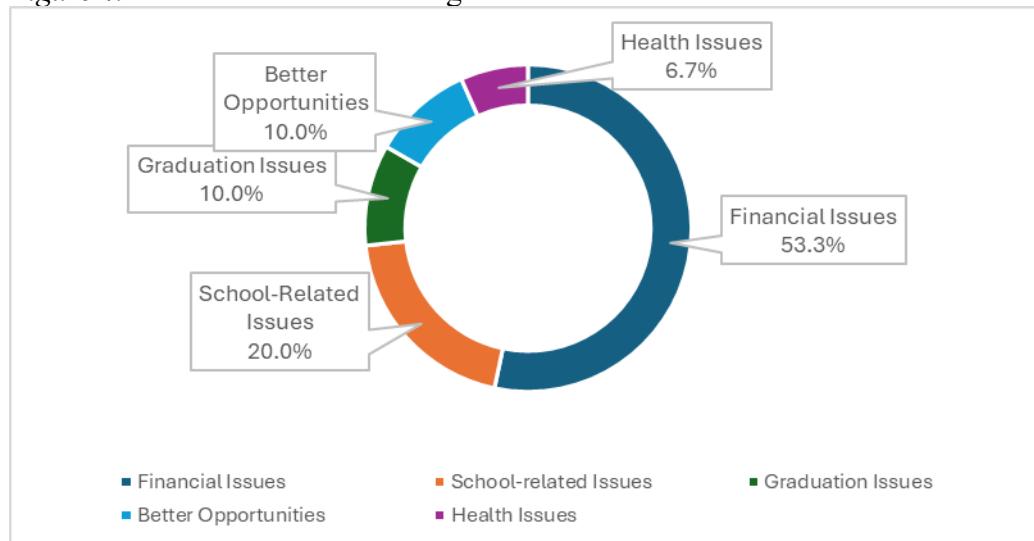
A textbox was provided for student responses. These comments were coded, summarized, and categorized into themes. See Table 4. The themes that emerged included: (a) Financial Issues, (b) School-Related Issues, (c) Graduation Issues, (d) Better Opportunities, and (e) Health Issues. As seen in Table 4 just over one-half, or sixteen divided by the total of thirty of the respondents' comments (53.3%) reported that the main reason for not returning to school would be financial issues.

Table 4. Summary of Responses from Survey Item 32: Reasons for Not Returning to School

Themes (total = 30 comments)				
Financial Issues (n=16)	School Issues (n=6)	Graduation Issues (n=3)	Better Opportunities (n=3)	Health Issues (n=2)
1-a high balance 2-balance issues 3-financial mishandling 4-financial 5-financial aid 6-financial aid 7-funding 8-if I didn't have the funds to pay for school 9-money 10-money problems 11-my scholarship not being added correctly 12-no money 13-not being able to pay for tuition 14-not having money to pay for school 15-scholarship 16-tuition	1-classes availability 2-advisors aren't the best 3-issues with the school 4-organization and student life 5-the band 6-unorganized	1-graduation 2-I will be graduated 3-graduation	1-dreams, goals, passion 2-I found a better engineering program plus a scholarship at a different HBCU that also has a good band. 3-Better opportunities	1-burnout 2-if anything happens to me in terms of family or health
53.3%	20.0%	10.0%	10.0%	6.7%

The second main reason students would not return to school would be for School-Related Issues (20.0%), followed by the fact that they would be graduating (10.0%), then taking advantage of better opportunities (10.0%), and Health Issues (6.7%). Figure 4 displays the relative frequency of the reasons why students would not return to school.

Figure 4. Reasons for Not Returning to School



Item #33: If you were to return to school next semester, what would be your reason for returning next semester and enrolling in courses?

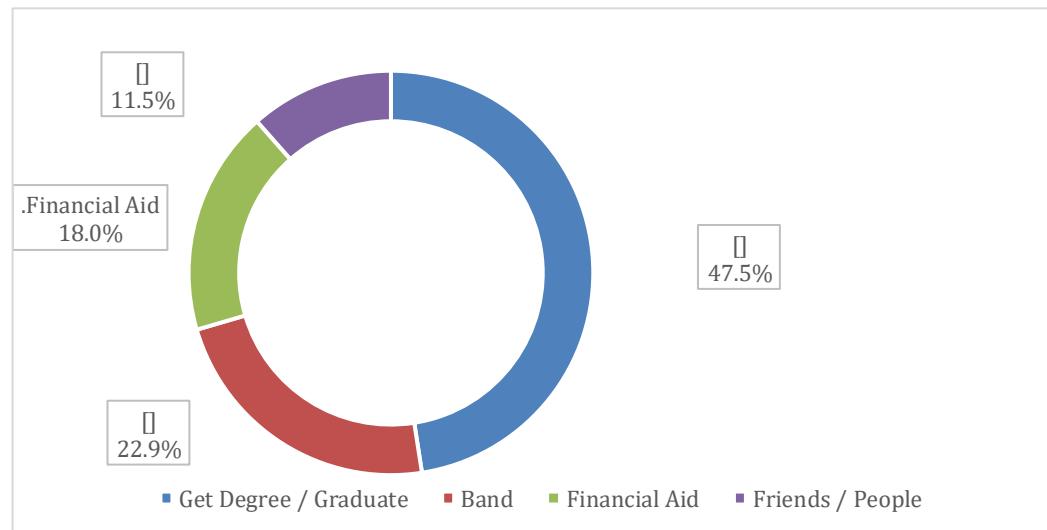
A textbox was provided for a response. These comments were coded, summarized, and categorized into themes. See Table 5 for the 61 comments and the four themes that emerged. These themes were: (a) Getting Degree and Graduating, followed by (b) Band, then (c) Financial Aid, and finally (d) Friends and People. As seen in Table 5, nearly half (47.5%), of the respondents' comments were focused on graduating, receiving a degree, and moving on to graduate school. The rest of the responses made up the other half. Nearly twenty-three percent (22.9%) was participation in the band, followed by the receipt and benefit of financial assistance (18%), and finally being with friends and people (11.5%). Figure 5 graphically portrays the relative frequency of each of these reasons for staying in school.

Table 5. Summary of Responses from Survey Item 33: Reasons for Staying in School

Themes (total = 61 comments)			
Get Degree (Graduate) (n=29)	Band (n=14)	Financial Aid (n=11)	Friends People (n=7)
1-complete my degree 2-continuing with my education 3-degree 4-degree 5-education 6-for a better future 7-get my degree and graduate 8-getting a degree	1-band 2-band 3-band 4-band 5-band and my	1-a low balance 2-financial aid 3-band scholarship 4-I couldn't find anywhere that pays for most of the school	1-friends 2-I love it here

9-getting my degree to move on to graduate school 10-getting my masters 11-grad school 12-i will be graduating next semester 13-I'm close to finishing 14-I'm committed to getting my degree 15-I'm going to get my degree 16-my college degree 17-my degree 18-my reason for staying here would be to obtain my degree 19-the degree 20-to finish college and to finish my degree 21-to get a degree 22-to get a degree 23-to get my degree 24-to get my education 25-to graduate 26-to get my degree 27-to get my education 28-to get my education 29-to graduate	passion for the school 6-band 7-being a part of the band 8-education and the band 9-I couldn't find anywhere else that had a good band 10-AOB 11-my love for music 12-the band 13-the band 14-the band program	5-I wouldn't be able to pay for anywhere else 6-money 7-my scholarship fund would be my reason for staying 8-my scholarship for being here 9-scholarship 10-scholarships and internship connections 11-most of school is paid for	3-my friends 4-My love for music and my friends 5-my friends 6-the people that I have met 7-ties
47.5%	22.9%	18.0%	11.5%

Figure 5. Reasons for Staying in School



Research Question Four (RQ4): *What recommendations should higher education administrators consider in support of Black males' sense of belonging through learning community as a marching band?*

To answer RQ4, a focus group session was conducted with AOB administrators and band members. Some themes that emerged from this focus group session contribute to a strong sense of belonging for university marching band students at HBCUs. These themes included (a) traditions, rituals, and cultural ambassadors, (b) community engagement and pride, and (c) showmanship and entertainment. Each of these themes is described in the sections that follow.

Tradition, Rituals, and Cultural Ambassadors

HBCU bands honor rich traditions passed down through generations. From pre-game rituals to halftime shows, these customs connect students to their institution's history. Alumni often return to witness these rituals, reinforcing a sense of continuity. As Professor X aptly states, "I was also in the band. So, this is very literal for me." This sense of belonging stems from the university's enduring traditions, which serve as pillars of unity and identity. Whether it is the annual homecoming festivities, longstanding rituals within academic departments, or the spirited performances of the university band, these traditions contribute to a vibrant and cohesive campus culture. Through active participation in these traditions, students not only forge lasting memories but also develop a sense of pride and attachment to their alma mater. Furthermore, these traditions often transcend generations, fostering a sense of continuity and shared legacy among students, faculty, staff, and alumni.

HBCU bands are central to campus culture. They act as ambassadors, representing their universities off-campus at events like Mardi Gras, Rose Bowl parades, and presidential inaugurations. Their performances resonate with both current students and alumni, reinforcing a sense of community and pride. Student D's observation, "If they're near, they hear us practicing, and sometimes during the morning on Friday," underscores the band's omnipresence and influence. Whether it is the spirited melodies echoing across campus during rehearsals or the lively performances energizing Friday morning rituals, the band's presence is felt by all.

Beyond musical contributions, the band fosters a sense of belonging and unity among students, faculty, and alumni. Its performances at sporting events, campus celebrations, and community outreach activities not only enhance school spirit but also strengthen connections with the broader community. Through its tireless dedication and passionate performances, the university band leaves an indelible mark on the institution's cultural landscape, enriching the collegiate experience for all who encounter its harmonious melodies.

Showmanship and Entertainment

HBCU marching bands are known for their high-stepping precision and dynamic showmanship. They blend musicianship with style, creating a hip and current mix that captivates audiences. Whether it is playing a trumpet, flute, or clarinet while on the move, or smashing cymbals, these bands exude confidence and flair. Reflecting on their involvement, Student B remarked, "I've never been in such a good band." Meanwhile, for Student C, being part of the AOB fulfilled a long-held desire. Expressing their contentment, Student C stated, "Being in the AOB is what I wanted."

These individual narratives underscore the importance of personal fulfillment and the pursuit of passions in shaping one's collegiate experience.

HBCU halftime shows are electrifying. Students take pride in entertaining the crowd with intricate formations, dance routines, and musical excellence. The thrill of performing in front of thousands fuels their passion. Being in the band fills students with satisfaction, with Student D describing how "people look at us like, kind of like stars." This recognition reflects the high esteem and admiration band members receive for their talent and contributions to campus life, highlighting their role as influential figures within the university community.

Community Engagement and Pride

HBCU bands actively engage with their local communities. They perform at parades, community events, and fundraisers. Being part of a band allows students to give back and connect with the broader community. Student B's affirmation, "I am involved in a community at Tennessee State," underscores the sense of belonging and connection fostered through such engagement. One prominent avenue through which marching bands interact with their communities is through parades. Whether it is a local holiday parade, a celebration of culture and heritage, or a commemorative event, marching bands add color, energy, and musical flair to the festivities, captivating audiences of all ages.

Additionally, marching bands often participate in community events such as fundraisers, charity walks, and cultural festivals, where their performances serve as a centerpiece of entertainment and celebration. By actively participating in these community engagements, marching bands not only display their musical talents but also reinforce their commitment to service, unity, and cultural enrichment. Moreover, such interactions strengthen the bond between the university and its surrounding community, fostering mutual respect, appreciation, and support. Thus, marching bands serve as ambassadors of goodwill, spreading joy and camaraderie as they actively engage with and enrich the communities they serve, as exemplified by Student B's involvement in the vibrant community at Tennessee State University.

Participating in HBCU marching bands carries a legacy of pride and tradition. Band members understand that they are part of something bigger than themselves. The commitment to precision in drills and movements fosters a unique bond among members, boosting their confidence. Student A aptly articulates this sentiment by stating, "As far as I'm concerned, they want you to succeed and do well in life." This supportive environment extends beyond musical endeavors, as band members often find themselves well received by the university community at large. Faculty and staff recognize the dedication and discipline required to excel in the band, which translates into positive perceptions of students' work ethic and character. Additionally, fellow students admire the camaraderie and talent displayed by band members, further solidifying their status as respected members of the campus community. Overall, being in the band not only enriches students' collegiate experiences but also enhances their reception and integration within the university ecosystem.

Discussion

The purpose of this study was to focus on exploring the sense of belonging specifically among Black males in the marching band at Tennessee State University, better known as *The Aristocrat of Bands*. The study aimed to understand the factors influencing their feelings of connection and inclusion within this particular context, providing insights into how their experiences contribute to their overall sense of well-being and satisfaction within the university community. This chapter reports on the major findings of this study, implications for educational leaders, conclusions, and recommendations for future research.

Major Findings

HBCUs boast vibrant marching bands and traditions that go beyond mere musical performances. From the results of the survey administered to the AOB members and the focus group session conducted with the AOB faculty members and selected students, the current study revealed four major findings that emerged as a result of the study's research questions. These findings include:

- HBCU marching bands are about tradition, community-building, and cultural representation.
- HBCU marching bands promote student leadership development.
- The longer HBCU marching band students participate in the band program, their sense of belonging increases,
- Students seek goal attainment (i.e., College Graduation)

Each of these major findings are described as follows:

Tradition, Community-Building, and Cultural Representation

Administrators emphasize that HBCU marching bands powerfully merge music with identity, community-building, self-presentation, and cultural representation. They dynamically transmit and reinvent traditions, serving as a cherished part of HBCU heritage. HBCU administrators appreciate the historical significance of marching bands within their institutions. They understand that these bands have a long-standing tradition that dates back decades and that they are an integral part of the cultural fabric of HBCUs. This finding aligns with what Mahoney (2022) reported about how HBCU marching band performances seamlessly blend music and dance, reclaiming Black joy, community, and self-expression.

Administrators recognize the importance of upholding these traditions and providing support to ensure the continued success and growth of the bands. They may allocate resources for band scholarships, equipment, uniforms, and facilities to help maintain the band's legacy and promote its traditions.

Leadership Development

The insights on the importance of patience, diligence, and hard work emerged from the input provided by faculty and staff during the focus group discussions. These faculty and staff members shared their observations and experiences, guiding students to recognize the significance of these qualities in their academic and personal development. Through their guidance and mentorship, faculty and staff encouraged students to reflect on the role of patience in navigating challenges, the necessity of diligence in maintaining focus, and the transformative impact of hard work in achieving success. By drawing on their expertise and fostering an atmosphere of open dialogue, faculty and staff effectively facilitated discussions that underscored the importance of these virtues in shaping students' growth and achievements.

As Cumberledge (2016) summarized in his work, band involvement also offers students leadership development, a sense of discipline and commitment, and overall well-being. Given the financial constraints faced by HBCUs, it is crucial to protect the continued vitality of these marching bands. Students staying in school directly impacts their personal growth, career opportunities, and financial stability. It equips them with valuable skills, fosters critical thinking, and expands their horizons, preparing them to succeed in life.

Higher Sense of Belonging as Time Spent in HBCU Marching Band Increases

Higher Peer Support and Faculty Support, and Lower Isolation

The themes that emerged from the focus group discussions centered around the participants' positive experiences and perspectives regarding their college journey. Students expressed genuine happiness and appreciation for being in school, highlighting the value they placed on their education and the opportunities it affords them. Moreover, the participants emphasized the importance of fostering strong relationships with fellow students, faculty, and staff members, recognizing the significant role these connections play in their overall satisfaction and success within the college community. This finding is consistent with Cooper's (2009) research where he describes that in order to persist, students need to feel they are in a campus community that supports and values them.

Students may consider leaving school if they have a solid plan for their future that does not rely on traditional academics. It is essential to have a clear direction and pursue opportunities that align with their goals, whether it is entrepreneurship, vocational training, or gaining practical experience through internships. However, having a well-thought-out plan is crucial to ensure success outside of the academic environment, and faculty support is essential. Balancing academic responsibilities, band commitments, and other obligations can be challenging for HBCU band members. However, with careful planning and effective time management, it is possible to navigate these demands successfully. Here are some ways faculty can support students as they attempt to balance everything towards graduation: (a) *Develop a structured schedule*, (b) *Prioritize academics*, (c) *Communicate with*

professors and band directors, (d) Seek academic and time management resources, and (e) Self-care. Remember, everyone's circumstances and commitments are different, so it is essential to find a balance. By prioritizing academics, effectively managing time, seeking support when needed, and practicing self-care, students can successfully navigate their band involvement while working towards graduation.

Students Seeking Goal Attainment

And there was unanimous agreement among all the focus group members regarding the pivotal significance of graduation in the college experience. They viewed graduation as not only a symbolic milestone marking their academic achievements but also as a culmination of their growth, learning, and personal development throughout their college journey. This finding was consistent with Braxton and Lee's (2005) study where they found in their exhaustive review of literature on student persistence that there was a link between social integration, institutional commitment, and a student's decision to persist at a four-year residential school.

Conclusions

The dynamic interplay between early engagement, a sense of belonging, and the unique challenges faced by underrepresented groups forms a complex tapestry. The current study, centered on understanding the impact of marching band participation on motivation to return to school among Black male students at an HBCU in the Midsouth, aims to contribute to this evolving discourse.

By building upon these scholarly insights, the study sought to offer nuanced recommendations for interventions tailored to the unique context of HBCUs, fostering sustained educational motivation among Black male marching band members. When referring back to Tinto's *Model of Involvement and Student Departure* (1975, 1993), we are referring specifically to the Academic and Social Systems. Refer to Figure 1.

Gasman and Drezner's (2014) theoretical exploration also offer a framework for comprehending the intricate dynamics at play within HBCUs. Palmer, Maramba, and Gasman's (2008) exploration further underscores the role of HBCUs in shaping students' motivation to persist in academic pursuits, emphasizing the need for tailored interventions within the HBCU context.

Implications for Leadership of the Aristocrat of Bands and HBCU Marching Bands

Some effective implementation recommendations for educational leaders may include: (a) transition assistance, (b) early contact and community building—perhaps showcasing, or highlighting, the AOB in high school venues; (c) providing academic support; (d) monitoring and early warning of academics and providing

tutoring, (e) counseling and advising, and (f) providing more resources for band program development.

Most importantly, however, would be for higher education leaders to improve student retention processes. Higher education leaders can take specific actions to enhance student retention processes for marching band members at HBCUs. Here are some specific suggestions:

- *Foster a Sense of Community*: Create a welcoming environment for marching band members. Encourage social interactions, mentorship, and bonding. Organize band-specific events, workshops, and mixers to strengthen connections among students.
- *Early Engagement and Orientation*: Include band participation in new student orientation programs. Highlight the band's traditions, expectations, and benefits. Pair incoming students with mentors (e.g., upperclassmen band members) to ease their transition.
- *Academic Support Services*: Provide academic advising tailored to band members' schedules and commitments. Offer tutoring services specifically for music courses or other challenging subjects.
- *Performance Opportunities*: Prioritize regular performances. Concerts, halftime shows, and community events are essential for band members. Celebrate their achievements publicly and within the campus community.
- *Financial Assistance*: Offer band-specific scholarships to recognize talent and commitment. Assist with instrument costs, uniform fees, and travel expenses.
- *Health and Well-Being*: Monitor physical and mental health of band members. Long rehearsals and performances can be demanding. Provide access to counseling services and wellness programs.
- *Retention Data Tracking*: Collect data on band members' retention rates, academic progress, and satisfaction. Identify early warning signs and intervene promptly when needed.
- *Alumni Engagement*: Connect band members with alumni who can offer guidance, career advice, and networking opportunities. Highlight successful alumni who were part of the marching band.
- *Celebrate Diversity and Culture*: Embrace the unique cultural identity of HBCU marching bands. Celebrate Black excellence and heritage. Incorporate cultural events into band activities. Remember, investing in the success of marching band members contributes not only to their retention but also to the vibrancy of the entire campus community.

Recommendations for Educational Leaders

HBCU bands serve as vital recruiting tools for their universities. Every note played and formation executed supports student enrollment, retention, and fundraising efforts. Tennessee State's *Aristocrat of Bands* even made history by becoming the first-ever marching band to win not one, but two Grammys for their gospel album, *The Urban Hymnal*. Students take immense pride in their band's achievements, recognizing them as a cornerstone of university spirit and identity.

This sentiment is echoed by Student D, who emphasized the band's significant impact on campus culture by stating, "A lot of people go to the football games to see us."

Such recognition underscores the band's central role in fostering a vibrant and engaging atmosphere at university events. Beyond enhancing school spirit, the band's visibility and reputation also contribute to increased university recruitment efforts. Prospective students are drawn to institutions with renowned band programs, recognizing them as vibrant communities where they can contribute to and participate in rich traditions. Thus, the band's accomplishments not only bolster school pride but also serve as a powerful recruitment tool, attracting students who seek to be part of a dynamic and spirited campus community.

Remember, these themes intertwine, creating a vibrant tapestry of experiences for HBCU marching band students. In summary, HBCU marching bands are more than musical ensembles; they embody excellence, culture, and a shared sense of belonging.

Recommendations for Future Research

Several suggestions for future research are recommended. First, a similar study which would include only female black AOB members and then comparing results to the current study. Another study might include a replication study including more than just this one HBCU. There are approximately forty HBCU marching bands. Perhaps, surveying and interviewing 30% of the HBCU marching band population may produce findings and results that would be generalizable to the population. An additional study may also include a similar study using only PWIs (Predominantly White Institutions) and their respective marching band members. There are many possibilities—all focused on sense of belonging and student retention.

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Appendix A. Copy of Instrument

Sense of Belonging Scale – Revised (2003)

5=completely true; 4=mostly true; 3=equally true and untrue; 2=mostly untrue; 1=completely untrue

Perceived Peer Support (8 items)

1. I have met with classmates outside of class to study for an exam
2. If I miss class, I know students who I could get notes from
3. I discuss events which happened outside of class with my classmates
4. I have discussed personal matters with students who I met in class
5. I could contact another student from class if I had a question
6. Other students are helpful in reminding me when assignments are due or when tests are approaching
7. I have developed personal relationships with other students in class
8. I invite people I know from class to do things socially

Perceived Classroom Comfort (4 items)

9. I feel comfortable contributing to class discussions
10. I feel comfortable asking a question in class
11. I feel comfortable volunteering ideas or opinions in class
12. Speaking in class is easy because I feel comfortable

Perceived Isolation (4 items)

13. It is difficult to meet other students in class
14. No one in my classes knows anything personal about me
15. I rarely talk to other students in my class

16. I know very few people in my class

Perceived Faculty Support (10 items)

17. I feel comfortable talking about a problem with faculty

18. I feel comfortable asking a teacher for help if I do not understand course-related material

19. I feel that a faculty member would be sensitive to my difficulties if I shared them

20. I feel comfortable socializing with a faculty member outside of class

21. I feel that a faculty member would be sympathetic if I was upset

22. I feel that a faculty member would take the time to talk to me if I needed help

23. If I had a reason, I would feel comfortable seeking help from a faculty member outside of class time (office hours etc.)

24. I feel comfortable seeking help from a teacher before or after class

25. I feel that a faculty member really tried to understand my problem when I talked about it

26. I feel comfortable asking a teacher for help with a personal problem

*Source: Hoffman, M.B., Richmond, J.R., Morrow, J.R., & Salomone, K. (2003). Investigating Sense of Belonging in First-Year college students. *Journal of College Student Retention*, 4(3), 227-256.*

DEMOGRAPHICS

27. What **Instrument** do you play? [text box]

28. **Age:** (choose one) 17 18 19 20 21 22 23 24 25

29. **Classification:** (choose one) freshman sophomore junior senior alumni

30. **Number of semesters in AOB:** (choose one) 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

31. **Ethnicity** (choose one) Black Bi-racial Other

32. If you did **not return to school** next semester, what would be the primary reason for not enrolling in courses? [text box]

33. If you **were to return to school** next semester, what would be the primary reason for returning to school? [text box]

PROVIDE YOUR EMAIL ADDRESS IF YOU WOULD LIKE TO BE INCLUDED IN A FOCUS GROUP INTERVIEW SESSION:

Appendix B. AOB Focus Group Questions and Consent Form

<p>The primary research questions for the study are the following:</p> <p>RQ1: How does participation in the university marching band impact Black male students' perceptions of belonging and community?</p> <p>RQ2: What aspects of the marching band experience most significantly contribute to Black male students' feelings of acceptance and value at the university?</p> <p>RQ3: How does marching band participation influence Black male students' decisions to remain enrolled at the university?</p> <p>RQ4: What recommendations should higher education administrators consider in support of Black males' sense of belonging through learning community as a marching band?</p>		
<p style="text-align: center;">Focus Group Guide</p> <p>The following questions ask students to think about their experiences at TSU.</p>		
Focus Area	Question	Probe
Background Questions	<p>Please tell me little about your life right now.</p>	<p>What led you to become a student at TSU?</p> <p>How long have you been attending TSU?</p> <p>Did you attend school uninterrupted? If not, why were there breaks in attendance of school?</p>
College Life	<p>Please describe your college experience at TSU.</p>	<p>What were some of your experiences inside and outside of the classroom, in general?</p>
Peer Interaction	<p>Tell me about your relationship with other students.</p>	<p>Were/are you popular with your classmates?</p> <p>Did/do you communicate with your classmates outside of school?</p>
Involvement	<p>What types of involvement, if any have you had in student organizations or student leadership roles on campus?</p>	<p><i>If no involvement:</i> Can you discuss what factors contributed to not being involved.</p> <p><i>If involved:</i> What have you gained/learned from your involvement on campus?</p>
Sense of Belonging Faculty/Staff	<p>What is your connection with the staff and faculty, if any, while you have been enrolled at TSU?</p>	<p>Was it something that you did, something done by the school, or a combination of both? If so, what was done?</p>
Sense of Belonging Students/Peers	<p>What is your connection with the students, if any, while you have been enrolled at TSU?</p>	<p>Was it something that you did, something done by the school, or a combination of both? If so, what was done?</p>
Motivation / Persistence	<p>Was there a particular motivation for pursuing your degree?</p>	<p>Why have you continued your education despite your challenges?</p>

	<p>At any point of your college career did you take time off or withdraw from school?</p>	<p>Were there any influences outside of college that impacted your decision to take a break or withdraw?</p>
Support – Family	<p>How did your family and friends feel about you going to college?</p> <p>How did they feel about you being in the band?</p>	<p>Were your family and friends supportive during your time in school?</p> <p>Did you ever feel alienated because of your enrollment in college?</p>
Support	<p>What has helped you succeed in college?</p> <p>What other resources or opportunities assisted you in staying in college?</p>	<p>Before you enrolled in college, what programs were you aware of that could assist in your endeavor to obtain an education?</p> <p>Who made you aware of the programs?</p>
Barriers	<p>Are there any other challenges that you can think of that affect your success or ability to stay in school?</p>	<p>How did you overcome these challenges?</p>
Suggestions for Students	<p>What advice would you offer other students who are entering the university experience?</p>	<p>Is there anything else that you want to tell me about your experiences of being in college.</p>
Closing	<p>If you have questions about this study, you can email me at gwinrow@tnstate.edu</p>	<p>Thank you for your time, I look forward to transcribing this interview and following up with you for accuracy.</p>

Appendix C. Means and Standard Deviations for all Survey Items by Scale

Survey Item	n	M*	SD
Survey Item for Perceived <i>Peer Support</i> Scale			
1. I have met with classmates outside of class to study for an exam.	61	4.11	1.17
2. If I miss class, I know students who I could get notes from.	61	4.46	0.18
3. I discuss events which happened outside of class with my classmates.	61	4.18	0.99
4. I have discussed personal matters with students who I met in class.	61	3.64	1.19
5. I could contact another student from class if I had a question.	61	4.20	1.09
6. Other students are helpful in reminding me when assignments are due or when tests are approaching.	61	4.07	1.09
7. I have developed personal relationships with other students in class.	61	4.10	1.06
8. I invite people I know from class to do things socially.	61	3.52	1.31
Total	61	4.04	0.75
Survey Items by Perceived <i>Classroom Comfort</i> Scale			
9. I feel comfortable contributing to class discussions.	61	4.23	0.86
10. I feel comfortable asking a question in class.	61	4.30	0.86
11. I feel comfortable volunteering ideas or opinion in class.	61	4.10	0.99
12. Speaking in class is easy because I feel comfortable.	61	4.03	1.05
Total	61	4.16	0.85
Survey Items by Perceived <i>Isolation</i> Scale			
13. It is difficult to meet other students in class.	61	2.80	1.22
14. No one in my classes knows anything personal about me.	61	3.21	1.71
15. I rarely talk to other students in my class.	61	2.79	1.86
16. I know very few people in my class.	61	3.00	1.23
Total	61	2.95	1.01
Survey Items by Perceived <i>Faculty Support</i> Scale			
17. I feel comfortable talking about a problem with faculty.	61	3.51	1.01
18. I feel comfortable asking a teacher for help if I do not understand course-related material.	61	4.28	0.74
19. I feel that a faculty member would be sensitive to my difficulties if I shared them.	61	3.31	1.06
20. I feel comfortable socializing with a faculty member outside of class.	61	3.57	1.04
21. I feel that a faculty member would be sympathetic if I was upset.	61	3.37	1.03
22. I feel that a faculty member would take the time to talk to me if I needed help.	61	3.89	0.95
23. If I had a reason, I would feel comfortable seeking help from a faculty member outside of class time (office hours, etc.)	61	3.97	0.99
24. I feel comfortable seeking help from a teacher before or after class.	61	4.13	.092
25. I feel that a faculty member really tried to understand my problem when I talked about it.	61	3.61	1.04
26. I feel comfortable asking a teacher for help with a personal problem.	61	3.38	1.99
Total	61	3.68	0.73

* 5=completely true; 4=mostly true; 3=equally true and untrue; 2=mostly untrue; 1=completely untrue

A Study on Nutrition Education for Mothers and Children Living in Underprivileged Circumstances in India

*By Smita Guha**

The objective of this study was to educate underprivileged mothers on nutrition through an educational musical video. The setting was in Kolkata, India. There were 30 mothers from accessible population, living in a low socio-economic neighborhood in Kolkata, India. Data was collected through pre and posttest survey questionnaires, observations, and focused interviews. The mothers were divided into two groups of 15. The return rate of the survey was 100%. The musical video was the intervention. The main feature of the intervention was information about essential diets, especially during pregnancy for mothers. The mothers were very focused and eagerly paid attention to the video. Then the video was repeated and was often paused for discussion. Results revealed that the posttest answers were much richer than the pretest answers. From the interview, it was evident that the mothers retained information from the video. The frequency count of the healthy food items mentioned in the survey questionnaire was analyzed using percentage. Then the data was analyzed qualitatively using a thematic approach. Two themes emerged from the data. The mothers gained knowledge about nutritional needs for themselves and their children, and maternal autonomy regarding diet increased. Since poor nutritional outcomes of Indian children are steadily increasing, this project addressed the importance of nutritious diet and the significance of maternal autonomy regarding health and nutrition.

Keywords: children, India, mothers, nutrition education, underprivileged

Introduction

An ethnic study offers a nation's history, society, and cultural production. It encourages greater understanding of the nation and promotes social justice especially among vulnerable populations. Poor nutritional outcomes of Indian children are occurring in the context of high economic growth rates. The aim of this study was on the importance that nutrition plays a key role in all domains of child development. The scope of the study was to educate the underprivileged mothers living in low socio-economic areas on the importance of nutrition. Educating mothers about the types of food that is needed during pregnancy and for the young children, so that the mothers can take adequate measures for their children's diet and for themselves, especially if they are pregnant. The purpose of this project was to educate the underprivileged mothers on nutrition for themselves and for their children. This paper will discuss how the mothers living in underprivileged circumstances were educated through a musical video, developed by the researcher

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as part of the intervention and how much the mother's retained information from the video through discussion.

Background of the Problem

Globally, India performs low across standard child nutritional measures (Haddad et al., 2014). India ranked 114 out of 132 countries, just ahead of Afghanistan and Pakistan for child malnutrition according to the International Food Policy Research Institute (2016). Studies indicated low birth weight is an outcome of poor socio-obstetric interaction (Dhar, Shah, Bhat, & Butt, 1991). Undernutrition or malnutrition puts children at more risk regarding disease vulnerability, and also adversely affects their physical, cognitive, and mental development (Barker, 1995; Sánchez, 2017). It may further adversely impact productivity in later life (Strauss & Thomas, 1995) and also increase economic inequality (Pickett & Wilkinson, 2015). Stunting and underweight among children living in low socio-economic area in India is a critical issue. In 2016, India had about 62 million stunted children, accounting for 40% of the global share of stunting (Khan & Mohanty, 2018). Bhalotra, Valente, and van Soest (2010) indicated that the 29% difference in stunting between two groups is mainly attributable to maternal education, maternal age at parturition, and child's birth year, while the 20% gap in wasting is primarily explainable by maternal education and the issue of sanitation in the residence. Similarly, Chalasani (2012) identified mother's education as one of the largest contributors to severe stunting and severe underweight inequality.

Literature Review of the Support Received

Pahwa, Kumar, and Toteja (2010) carried out a community-based health and nutrition-education intervention, focusing on several factors influencing child health with special emphasis on diarrhea, in a slum of Delhi, India. Three hundred and seventy mothers of children aged more than 12 and 71 months were identified, and they were surveyed from a large urban slum. They were enrolled in the study with two groups, one was the control group and the other treatment group who received intervention. One hundred and ninety-five mothers from the treatment group were provided health and nutrition education through two approaches developed for the study: "personal discussion sessions" and "lane approach". Results indicated that after the intervention, there was a significant improvement in all the areas that the mothers' received interventions. The intervention improved the knowledge and attitudes of mothers. Further, the results suggested that there is a need for intensive programs, especially for the urban slums. Another initiative was the Village Health and Nutrition Day (VHND) which has been observed in India, mainly in West Bengal (Biswas, Dasgupta, & Ghosh, 2018). The objective was to do an observational study to assess the quality of the health and nutrition of the village in all 12 blocks of North 24 Parganas district in West Bengal. The result suggested that continuous monitoring and supportive supervision at all levels, training of health care workers,

reallocation and infrastructure development may help in organizing quality village health and nutrition.

To measure the gap in under-five child undernutrition between poor and non-poor households in urban India, Kumar and Singh (2013) applied the Blinder-Oaxaca decomposition method to 2005–2006 NFHS data. The authors identified the main contributing factors as underutilization of health care services, undernutrition, poor maternal body mass index (BMI), and low levels of parental education among impoverished urbanists. The authors also suggested the education level of the mothers living in poor and urban neighborhoods can improve the negative effect of poverty in childhood undernutrition.

Further, Puri & Mehta's (1994) study of 155 pre-school children belonging to low socio-economic group in villages around Chandigarh, were imparted nutrition and health education (NHE) for one year. The researchers focused on three aspects, i.e., personal hygiene (PH), food hygiene (FH) and recognition of foods (RF) and that was imparted by Balsevikas (BSs) in charge of the creches, daily in a non-formal manner, for one year and evaluated periodically. They developed appropriate teaching material like songs, rhymes and roleplays for the treatment. The authors had objective tools in the form of checklists for impact evaluation. Only on personal hygiene, the children of the lowest income group improved significantly. On food hygiene and recognition of food, all children registered showed significant improvement. The researchers inferred that on food hygiene and recognition of food the children improved as these two aspects were under the direct control of Balsevikas who enthused and involved the children by providing an interacting and stimulating environment. The results also indicated a positive impact on pre-school children when appropriate material and methods are used. In a similar area, the objectives of the research by D'Alimonte et al. (2016) was to examine those well-nourished children living in disadvantaged areas to understand local growth-promoting behaviors. This study explored the factors that influence the infant and young child feeding behaviors among mothers. Children were purposefully selected from households enrolled in a community management of acute malnutrition program in an urban slum of Mumbai, India. Qualitative methods were employed by means of semi-structured key informant interviews with both positive and non-positive deviant mothers. An observation checklist assessed household hygiene. Data analysis was based on the Grounded Theory of Qualitative Research. The results indicated that positive deviant mothers largely exhibited optimal infant and young child feeding practices explained by maternal information seeking behaviors; mothers were acknowledging the importance of maternal health, and social support. Interestingly, the relationship between mother and health care worker seemed to influence how well they listened to the health care workers' recommendations. It was found that across all households, the daily consumption of high-energy, processed foods was very much apparent. The recommendation was to tailor the programs to include social support and counseling training for health care workers to engage more closely with mothers, exploring the feasibility of a women's social group for mothers to share information on child rearing, and further teaching mothers about healthy eating and the link between nutrition and health.

In another study, Sivaramakrishnan and Patel (1993) examined reasoning about the cause and treatment of three types of childhood protein energy malnutrition (PEM) by 108 mothers in rural South India. All the mothers were interviewed, and they explained about their childhood nutritional problems. All interviews were verbally recorded, transcribed, and then analyzed using cognitive methods of analysis. The results indicated that knowledge and practices associated with traditional systems of Indian medicine prevalent in rural areas greatly influenced the mothers' reasoning. The mothers' explanations were shown to have story-like structures, with sequences of events linked by strong causal explanations. However, the mothers with higher levels of formal education indicated greater verbal use of concepts related to biomedical theories of nutritional disorders but their interpretations of these concepts were still based on the traditional theory. The study results indicated both positive and negative aspects of traditional knowledge and beliefs for adequate child nutrition and health. The authors stated that future studies should develop improved instructional strategies for nutrition and health education in relation to knowledge organization. Very interestingly, in another research with The NNEdPro Core Team, Bhavishya Shakti Researchers and Inner Wheel Club of Greater Calcutta launched Mobile Teaching Kitchens as a nutritional education tool in two Indian slum areas to improve awareness of diet diversity and disease prevention through education and using locally sourced foods and cooking skills. Local volunteers, who were trained in healthy cooking, transferred the core nutritional principles by cooking sustainable, nutritional and affordable meals. They had a model which was "See one, Do one and Teach one" model to transfer knowledge to their peers. The markers of malnutrition were assessed before and after this program. The team evaluated longitudinally the efficacy of using mobile teaching kitchens to provide nutrition education through cooking, teaching healthy eating to a disadvantaged community in the urban slums of India. Results indicated that there was a mean change of 2.75cm growth in height in children. Other markers of nutritional status such as weight did not significantly change. Statistically significant changes were seen in self-perceived nutritional knowledge about dietary protein sources, where the median response increased from 2 to 3 out of 5 (5 indicating excellent understanding) ($P < .05$). In one area of a slum, 57% of mothers showed 2 or more signs of micronutrient deficiency pre-intervention, with all other mothers having one sign. Although after post-intervention, no mother had any sign of micronutrient deficiency showing improvement in nutritional status, an overall improvement in clinical status and nutritional knowledge was seen using Mobile Teaching Kitchens as an educational tool. The authors recommended that further evaluation of this teaching method is needed with larger sample size.

The literature indicated that although India needs improvements to solve the problem of undernutrition or malnutrition among children, there were some support given. The literature indicated that one of the main factors of undernutrition could be low levels of maternal autonomy. The other cause could be lack of education. Maternal autonomy and education both play relatively important roles. An improvement in maternal autonomy is expected to improve a mother's ability to make decisions regarding her children's health and nutrition; and a more autonomous mother is also likely to have greater access to resources, may lead to the

adoption of healthy and diversified diets, improve the nutritional content of diets, contribute to better food hygiene and sanitation, and thereby reduce the risk of infection and disease in the family, especially with young children.

Maternal autonomy plays an important role in improving child undernutrition, which is the outcome of insufficient nutritious food intake among children and as a result suffer from continuous infectious diseases (United Nations Development Programme 2006). Therefore, it is imperative to make a connection between household-level socio-economic factors and in particular the role of maternal autonomy and the extent to which it manifests into poor nutritional outcomes for children. Most studies support an association between child nutrition and maternal autonomy.

The above records identified the causes of undernutrition or malnutrition among children from low socio-economic areas. Although there are some programs initiated by the government, the population is too large to take active measures on this issue. The above literature recommended that nutrition education is important for low-income mothers, and they indicated that growth in learning occurs after intervention. However, there are many more interventions needed for the mothers living in slums. Further, it is also important who delivers the interventions as the worker or researcher needs to engage more closely with mothers on a personal level. This project targeted pregnant mothers and/or mothers of young children living in poor urban communities, to be educated so that they can help each other and gain maternal autonomy to make decisions for their children's nutrition. The significance of this project is to offer a helping hand to underprivileged mothers to learn about the importance of nutrition, types of nutritious food and how to acquire a nutritious diet for their children.

Purpose and Research Question

The purpose of this research was to educate mothers living in underprivileged areas on health and nutrition and to encourage the mothers to make decisions about their own diet and the diet of their children. The intervention was administered through a musical video. The video had two parts. The first part was information about specific nutritious diets during the three trimesters of pregnancy and how to grow the crops starting with herbs and easy to grow plants. The second part was the musical portion for the young children. The names of different fruits and vegetables was mentioned in the lyric and composed with an entertaining tune so that the children could remember the lyric and sing along. The research question was "to what extent did the mothers gain knowledge about diet for themselves and their children and how much did they feel empowered to make their own decision?"

Methodology

Participants

There were 30 mothers from Kolkata, India living in the underprivileged area, participated in this research project. The study took place in South Kolkata, India in the West Bengal State. It is situated in the southern part of the state. The sample was selected from a low socio-economic area, from an accessible population on a voluntary basis. The participants had minimal schooling, they had some reading and writing skills, and their income was below poverty level. Table 1 refers to demographic information.

Table 1. Summary of Characteristics

Characteristic	Mean	Standard Deviation
1. Age of the Mothers	26.3 years	4.59
2. Number of Children	1.167	0.78
3. Age of the Children	3.78 years	3.86

The researcher appointed an assistant from the underprivileged community of mothers who helped the project. The assistant was also a mother in the same community. She made an announcement to the mothers living in slums through a *WhatsApp* group and asked for volunteers to take part in a nutrition program. Mothers who volunteered became participants in the study. Most of the mothers were maids in different households and assisted in cooking and cleaning daily. The time that the mothers were available was after lunch, around 2 to 5 pm. The intervention took place in a community room during a convenient time for the mothers.

Procedure

A community center was rented for the afternoon. A projector and screen, a sheet for mothers to sit on the floor, two tables and four chairs were rented. The mothers preferred to sit on the floor as they could carry their young children to sit beside them. The mothers were grouped in two because of space issues and management. Fifteen mothers were randomly selected and requested to come at a certain time. The survey questionnaires were distributed to mothers.

Then the mothers were shown a video on nutrition and health. This video was specially prepared for this project. The content of the video was about the type of food that pregnant mothers should consider eating during each trimester of their pregnancy. This was followed by a children's song. The researcher was the narrator and the singer in the video. The video was specially made for mothers and children. This video was shown again and paused frequently for discussion. Then the posttest questionnaire was distributed. Once all the questionnaires were collected, the mothers were given nutritious food prepared from a restaurant, water and gift items. Then the second group of fifteen mothers, did the same exact process.

Data Collection and Procedure for Data Analysis

Data was collected through a pre and posttest survey questionnaire, observation and interviews (Table 2).

The survey questionnaire consisted of two parts. The first part was the demographic information, and the second part had the questions. In the demographic information, names of the mothers, their age, number of children and children's age(s) were asked. Specific questions were developed to examine the knowledge of mothers before and after the intervention. There were five questions asked. The first question was *the type of food pregnant mothers should eat and to name some of the food*. The second question was to provide reasons *why pregnant mothers should eat healthy and nutritious food*. The third question was about the source of food and *how you would get or prepare nutritious food*. The fourth question was about the type of food and *what kind of food you would give to your children for the children's growth and development*. The fifth and the last question was *what kind of produce they can grow in their homes or in a pot*.

Table 2. Pre/Post Test Questionnaires

1. What type of food should pregnant mothers eat? Name some of the food.
2. Why should pregnant mothers eat healthy and nutritious food?
3. How would you get or prepare nutritious food?
4. What kind of food would you give to your children for the children's growth and development?
5. What kind of produce can they grow in their homes or in a pot?

When the mothers arrived at the community center, they were told that there was a survey questionnaire (which they referred to as "form") that they had to complete. There were two words in the questionnaire that they had a difficult time understanding so those were explained to them. The mothers were also told that after watching the video they would have to complete the same "form" to examine how much information they retained. The video was only 6 minutes long and was shown twice. The mothers were asked to volunteer to stay back for the interview. From both the groups, five mothers were randomly selected and requested to stay back for the interview. Throughout the process, the researcher and another observer, who has earned a doctorate in humanities recorded their observation in notebooks. Later they transcribed and compared their notes.

The frequency count of the healthy food items from the pre and posttest survey questionnaires were analyzed using percentage. The data were analyzed qualitatively using a thematic approach.

Results

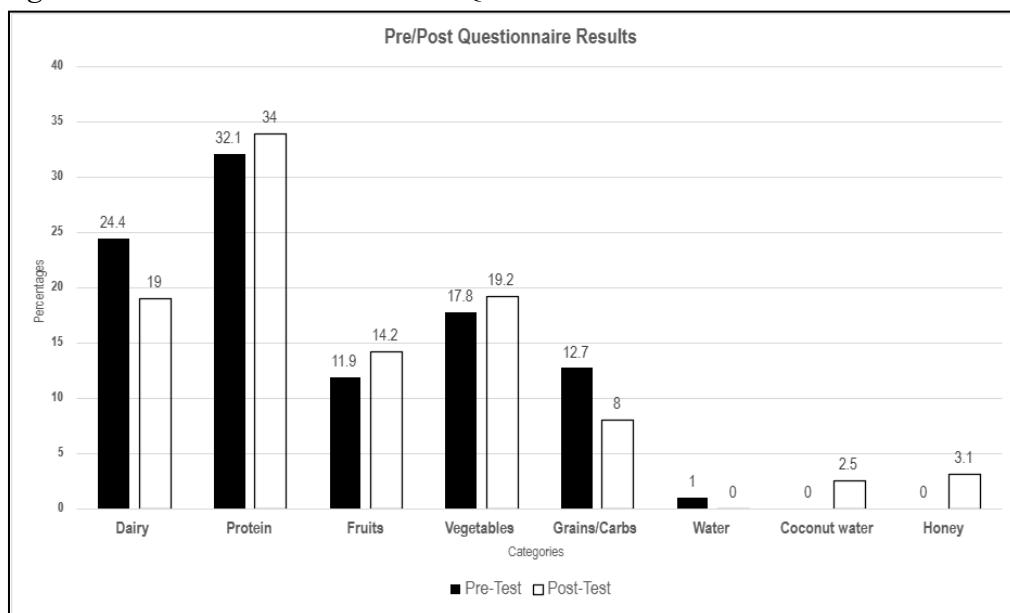
Mothers were very eager to learn about nutritious food for their children, and the mothers were empowered to make decisions as they learned more about nutrition during pregnancy and about nutritious food for their children.

Survey Questionnaires

The answers in the posttest survey questionnaire were much richer than the pretest. Two themes emerged from the survey questionnaires, informal interviews and observations. The first theme was mothers gained knowledge of health and nutrition for themselves and their children and the other theme was maternal autonomy increased. The mothers were able to write some information about the importance of nutritious food. In the pretest, most of the mothers said that their children's weight will increase with nutritious food but mentioned healthy development in the post test. Further, they mentioned fish, meat and milk are some of the foods they should eat in the pretest questionnaire. However, they mentioned vegetables, nuts, and coconut water in the post test questionnaire after watching the video. Moreover, the mothers in the pretest mentioned that they would buy food from the store. In the post test they mentioned that they will buy nutritious produce but will cook at home and would also grow some herbs and plants in the pot. Therefore, by watching the informational video and through interactive discussion the mothers gained knowledge in nutrition. They all agreed that they would feed nutritious food to their children and eat nutritious food during pregnancy.

Specific results from the pre- and post-test survey questionnaires with graphical representation are shown in Figure 1.

Figure 1. Pre/Post Test Results from Q 1 and 4



The data from Q 1 and 4 were collapsed due to their similar focus on identifying healthy foods recommended for pregnant mothers and their children.

The pretest survey results reveal that dairy products made up 24.4% of all responses, with milk being the most frequently mentioned at 21.4%. Other dairy items such as butter (1.1%), ghee (0.76%), and a popular ethnic food, cream of wheat (1.1%) were less commonly noted in the pretest. The posttest survey results revealed a

decrease in the responses for dairy. Despite the decline, dairy items such as butter and ghee were still mentioned many times. Mother's milk became a significant new mention in the posttest, accounting for 17% of the milk-related responses.

Protein emerged as the most popular category, accounting for 32.1% of all responses. Within this category, eggs were mentioned at 16.3%, followed by fish at 7.9%, meat at 6.06%, and nuts at 1.51%. Soy was only noted in 0.38% of responses. In the posttest there was a slight increase within the protein section. Eggs and nuts were the most frequently mentioned items, together making up about 20% of the category.

In the pretest, fruits accounted for 11.9% of all responses. Bananas were the most frequently mentioned fruit at 2.27%, followed by lemons at 1.14%. Other fruits like apples, oranges, and guavas were also mentioned. Vegetables were highlighted by 17.8% of respondents, with carrots and herbs dominating the category, collectively making up 10% of the total vegetable mentioned. Spinach was noted only once, representing 0.38% of the overall responses.

In the posttest, there was a noticeable increase in responses to the fruits and vegetables. The fruits section reflected greater diversity, with new mentions such as pineapple, mango, clementine, and a frequent response of amloki (gooseberry), an ethnic food, contributing to a total of 14.2% of responses. Similarly, the vegetables category saw an expanded variety compared to the pretest results. Beans and spinach were mentioned more frequently, along with green herbs for brain health, cilantro, and herbs, having red leaves, an ethnic plant.

The grains/carbs category accounted for 12.7% of all responses in the pretest. Lentils, ethnic food items, were the most frequently mentioned item in this group, making up 6.78% of responses, followed closely by rice at 3.03%. More ethnic food like gram flour, cracked wheat and wheat tortillas were also noted. In the posttest, grains/carbs category saw a decrease in response, with lentils leading at 4.3% of responses, followed by rice at nearly 2%.

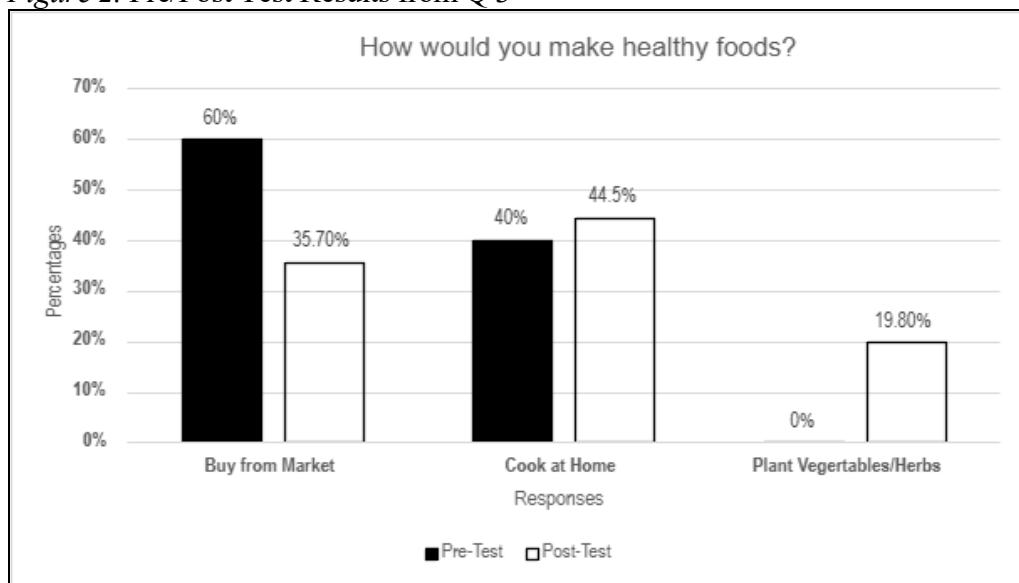
The water category was less prominent, comprising 1% of total responses in the pretest, but limited responses of water were noted in the posttest. The posttest questionnaire and interview yielded a new common category, coconut water, which accounted for 2.5% of the total responses. Honey was also another new common category mentioned several times, making up 3.1% of all responses.

Table 3. Pre/Post Test Results from Q 2

Responses	Pre – Test Results	Post - Test Results
Childs Health/Nutrition	46.6%	51.7%
Both Mother & Child's Heath	43.3%	48%

Table 3 showed the results of Q 2 before and after the study. The data indicated a notable increase in responses related to "Child's Health/Nutrition" and "Both Mother & Child's Health". The percentage of pregnant mothers prioritizing child health and nutrition rose from 46.6% in the pretest results to 51.7% in the post- test results. In addition to the increase in responses related to the health of both the mother and child, it rose from 43.3% to 48%.

Figure 2. Pre/Post Test Results from Q 3



The graph showed the results of Q 3, "How would you make healthy foods?" from the pre-and-post survey questionnaires. Initially, 60% of respondents preferred buying their food exclusively from the market. However, this figure decreased slightly to 35.7% in the posttest, which means mothers are less likely to buy from the market. In contrast, there has been a significant increase in the preference for cooking at home, rising from 40% in the pretest to 44.5% in the posttest. The results indicated that mothers are more likely to cook food at home as opposed to buying ready food from the store. Additionally, the data shows that 19.8% of respondents were then inclined to plant their own vegetables and herbs, whereas it was not mentioned in the pretest.

Table 4. Pre/Post Test Results from Q 5

Vegetables Mentioned in the Pre/Post Test
Spinach, Tomato, Carrots, Cilantro, Green Herbs, Potato, Eggplant, Squash, Beans, Chili, Pumpkin

Table 4 lists the results of Question 5, "What kind of produce can they grow in their homes or in a pot?" This data reveals significant changes in mothers' preferences for growing vegetables and herbs. There is a clear increase in growing herbs, particularly green herbs with 12.1% indicating they would grow in the pretest, rising to 20% in the posttest. Mention of potatoes also saw a slight increase, going from 3.8% in the pretest to 4.5% in the posttest. However, interest in growing chili experienced a significant decline, dropping from 18% in the pretest to 13% in the posttest. Additionally, vegetables such as squash, beans, and pumpkin showed slight increases in preference among mothers.

Informal Interviews

The interviews revealed that the mothers received knowledge from watching the video and through discussion. They valued the topic as they believed it was for their good health and for their children's health. The mothers said that they did not know this information before. They admitted that they knew food was important as they became hungry but did not know to this extent that nutrition plays an important role for their babies during and after pregnancy. One mother said she regretted not knowing about these diets earlier. They also mentioned that they are going to grow crops in pots and prepare food more often than buying food from the store. One mother mentioned that her child always wanted to eat street food and another mother nodded her head in affirming that. All the mothers stated that they liked the musical part of the video for their children and said that their children will sing and remember the songs. The informal interviews revealed that they tirelessly work at people's home cleaning or cooking and then again work in their home. Their day started early in the morning and ended late at night.

Observation

The mothers came into the community center in small groups or individually. Few mothers had young children in their arms. Similar results were found from both the groups. All the mothers knew each other as they were from the same community. Some are pregnant and some have young children. The mothers were very eager to listen to what the researcher had to say. They were serious about their children's health and nutrition. When the video was on, all their attention was on the video and what was discussed. Not a single time did they show restlessness, rather they wanted more information.

The first time the video was shown, it was observed that all the mothers were very attentive listening to the video. The second time the video was often paused, and time was given for discussion, explaining and reiterating the main points. The mothers were quite eager to interact and take part in the discussion. Then the researcher discussed with the mothers and summarized the main points from the video. The video was given to the assistant to share with all the mothers.

The observation report indicated that all the mothers were very attentive and eager to learn about this topic. Since the researcher was also the narrator in the video, and the researcher was present there, she spoke to the mothers and discussed explaining each point. The researcher said that she was a mother of two children and her personal experience drew the mothers closer to the researcher. A good relationship and trust were developed between the mothers and the researcher. After the discussion, the researcher handed the mothers the same questionnaire again and they gladly completed the questionnaire. All the mothers thanked the researcher for this program and asked if they could see the video again. The researcher assured the mother that she would send the video to the assistant who would share it with everyone. They even asked the researcher if she had plans to do similar programs for them again.

Discussion

This project helped mothers living in underprivileged circumstances to learn about health and nutrition during pregnancy and for their children. This project addressed the poor nutritional outcomes of Indian children that are occurring in the context of high economic growth rates. Since nutrition plays a key role in all domains of child development, mothers who are living in underprivileged areas need to be educated first so that they can take adequate measures for their children's diet and for themselves, especially if they are pregnant. The overall impact of the study indicated that the intervention was a great success.

Previous literature mentioned maternal autonomy and lack of education as the two main reasons for child undernutrition. This project addressed both maternal autonomy, and health and nutrition education. Mothers received nutrition education in Bengali, they had the video to refer and since they came as a group and from the same community, it was expected that the mothers would have more maternal autonomy in making decisions for their children.

From this project, the mothers have greater access to resources, knowledge of healthy and diversified diets, and improved nutritional content of diets. Further through the video, they learned about better food hygiene and sanitation, which would hopefully reduce the risk of infection and disease.

In general, the results indicated that the mothers gained knowledge of health and nutrition for themselves and for their children. Also maternal autonomy was evident from the mothers confirmation that they would grow plants and would buy some produce from the market and cook more at home. Further, coconut water and mother's milk were often mentioned in the posttest questionnaire confirming maternal autonomy. Ethnic food as gram flour, cream of wheat, herbs with red leaves and green leaves, lentils were stated in posttest questionnaire.

This study addressed the concern that India performs low across standard child nutritional measures as mentioned by Haddad et al. (2014). Undernutrition or malnutrition puts children at more risk regarding disease vulnerability, and adversely affects all domains of their development as asserted by researchers like Barker (1995) and Sánchez (2017), which in turn may further adversely impact productivity in later life (Strauss & Thomas, 1995). Further, Chalasani (2012) identified mother's education as one of the largest contributors to severe stunting and severe underweight inequality, which is why this research focused on educating mothers living in a poor urban community.

Similar to the study by Pahwa et al. (2010), this study also indicated significant improvement in knowledge and attitudes of the mothers. This research had a similar type of intervention to Puri and Mehta's (1994) study. They also developed appropriate teaching material like songs, rhymes and roleplays for the treatment and had similar results.

Further, literature suggested that India needs improvements to solve the problem of undernutrition or malnutrition among children. One of the main factors of undernutrition could be low levels of maternal autonomy. The other cause could be lack of education. Maternal autonomy and education both play relatively important roles. This study addressed both.

Although the study was administered in depth educating the mothers with discussion and explanation with reference to the video, however, the study involved mothers from only one slum community and the sample size was small with 30 mothers, which were the limitation of the study. In future, this kind of project should be replicated with more sample size and more slum communities throughout India and possibly a follow-up study to find out how the mothers are continuously taking active measures regarding nutrition and overall health.

Conclusion

The objective of this study was to educate underprivileged mothers and children on nutrition through a musical video intervention about essential diets, especially during pregnancy for mothers. Since the mothers listened very attentively while the video was playing, they retained information from the video that yielded to the fact that the posttest answers were much richer than the pretest answers. The significance of the study was that mothers gained knowledge about nutritional needs for themselves and their children, and maternal autonomy about diet increased. Since poor nutritional outcomes of Indian children are steadily increasing, this project addressed importance of nutritious diet and significance of maternal autonomy regarding health and nutrition. The success of the study recommends that if this kind of video is shown to underprivileged mothers on a large scale, then many of the above diet related issues could be solved. Moreover, the video was focused, brief and could be played as many times as needed. Further, this kind of musical video creates a lasting effect because of music and its captivating nature. The study recommends that active and personal measures must be taken to prevent children from malnutrition so that the children from the very start can lead a healthy life.

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Europe's Education-to-work Transition Regimes in the Twenty-first Century¹

*By Ken Roberts**

This paper reviews then builds upon previous comparative research into education-to-work transition regimes in Europe. It treats regimes as negotiated in education and labour markets, constantly subject to change. The paper adds America to intra-European comparisons then identifies the main direction of change in 21st century Europe. This has been away from multi-tracking towards American-type single processions. The main change drivers are identified (young people and their families), the facilitators (higher education providers and employers), and losers (providers of vocational education and training). It is argued that 21st century global economic and technological trends favour American-type transition regimes. Limitations in the paper are acknowledged and the conclusions are summarised.

Keywords: education, employment, labour markets, transition regimes, youth.

Aims and Methods

This paper uses transition regime theory to map changes in education-to-work transitions across 21st century Europe. Previous attempts to compare transition regimes in different European countries can claim only limited success. The following passages aim for greater success by developing the transition regime concept, and widening the range of countries that are compared. The aim is to identify drivers and directions of changes in Europe during the 21st century.

Methods have to adapt to the absence of harmonised time series statistics that are required ideally to apply transition theory across all the countries that are considered. However, the questions that social science addresses cannot be governed by the availability of ideal data. The argument that follows uses data from official sources (national governments, OECD and Eurostat for example), but relies more heavily on the reports of academic research, both comparative and within single countries. The paper's conclusions are that the main direction of change in transitions from education-to-work in Europe have been towards hitherto American-type transitions, while America itself has become more extremely American. The main change driver everywhere has been student demand rather than labour force requirements.

Before proceeding a note on terminology is required. First, some authors (for example Raffe, 2008) use 'systems' for what here are described as 'regimes'. There is no issue of substance here. The terms are used with identical meanings. The current paper prefers 'regimes' on account of the intentional allusion to regiments moving forward together. Second, the literature sometimes refers to 'routes' and elsewhere to 'pathways'. Again, the meanings are identical. For purposes of the present paper broad

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routes such as through university are called 'routes' while 'pathways' refer to narrower tracks within such routes.

The paper rejects the view that seeking routes and pathways is outdated since transitions today have become disjointed with more cross-overs between routes and yo-yoing back and forth from education to work then back into education (for example see Pais, 2003). The evidence from across Europe that is introduced below rejects this argument. Cross-overs are exceptional and yo-yoing is not a new normal but a sign of failure and disadvantage.

The paper proceeds by discussing the concept of transitions regime and its previous uses, then applies the concept to 21st century Europe. The conclusions are about the main direction of change and the drivers, facilitators and losers.

Transition Regimes

The 1990s was a decade when international collaboration accelerated in all fields of research. This was especially true in Europe. Funding for collaborative research was available from successive European Commission frameworks, the European Science Foundation, an Anglo-German Foundation and national funding bodies. Individuals and institutions recognised that being at the 'cutting edge' meant collaborating and disseminating internationally. This was facilitated by the adoption of English as the principal international language.

Transition Regimes in Youth Research

Sociologists with interests in youth had been meeting annually since 1975 in the International Sociological Association's Research Committee on Youth. The European Sociological Association was founded in 1994 and a Research Network on Youth and Generation followed quickly in 1995. A variety of ad hoc consortia launched comparative research projects. Some specialised networks were formed. One was the European Research Network on Transitions in Youth (TiY) which held its first meeting in Barcelona in 1993 and has met annually ever since. The European Group for Integrated Youth Research (EGRIS) was formed in 2001 (European Group for Integrated Youth Research, 2001). Both networks had a special interest in transitions from education-to-work and both adopted the transition regime concept in their work. They did not disagree on the characteristics of a transition regime (or system), namely:

- Parallel pathways/routes, which vary in length, through education and training.
- Cohorts split at some point during education.
- Family class origins and prior educational attainments are usually good predictors of which routes and pathways are followed.
- Exits are into different classes of employment...
- Regimes are national or sub-national depending on who governs education and training.
- Local variations are in the proportions following different routes and pathways.

Most members of TiY were conducting quantitative studies of school-to-work transitions in their own countries. Some had embarked on longitudinal studies tracking their samples' progress from lower through upper secondary education and training then beyond. Each was studying a national transition regime. While the research remained 'at home' they had no cause to question or explain what made the country's regime different. TiY participants learnt that in all the countries that were represented transitions were lengthening and becoming more complicated with the introduction of new provisions in education and training. When presenting their findings at TiY workshops all present found themselves hearing about institutions and qualifications with unfamiliar names and which, in many instances, had no close counterparts in their own countries. At that time there was sufficient harmonised data from an EU15 to seek a typology of regimes which would reduce 15 cases to a more manageable number of types and allow each country's researchers to place their own regimes into one of the types. Possible outcomes included the identification of 'best practices' (what works) which might then be Europeanised (Raffe, 2008). The network was hoping for an equivalent to Esping-Andersen's typology of welfare regimes (Esping-Andersen, 1990).

The eventual outcome at TiY was an admission of failure (Raffe, 2014). Failure to produce a typology of their own led some youth research groups to resort to the Esping-Andersen types when comparing the experiences of university students in different countries (Antonucci, 2016) and during spells of unemployment (Hammer, 2003). When the TiY network was created all the countries that were represented were experiencing levels of youth unemployment well above what had been normal from the 1950s-70s. However, welfare regime types do not map onto differences in education-to-work transitions such as the ages at which pupils are separated into different tracks, or the proportions entering higher education. These features simply refuse to cluster into a limited number of types. Raffe's advice was to reserve the transition regime concept for national case studies. TiY's initial project ran into a conceptual dead end. The network has lived on with successive changes of agendas and membership.

EGRIS was TiY's friendly rival with its own agenda. The group preferred qualitative to quantitative methods and insisted that all aspects of young people's lives should be captured since education-to-work, family and household transitions, and uses of free time and discretionary spending were all inter-related. The group's sole project was qualitative investigations among groups from disadvantaged neighbourhoods and families in 10 European countries. The agenda was to discover how the prevailing transition regimes were imprinted on young people's biographies and possibly on their consciousness. The product was an interesting set of case studies (see Walther, 2012, 2015, 2017; Walther et al, 2005). However, the transition regime concept disintegrated during the research and EGRIS itself disintegrated on completion of its project.

Developing the Concept and Refocusing its uses

The analysis that follows is based on several developments, mainly additions, to the original transition regime concept, and a refocus in comparative enquiries. We need to jettison the static view with which quantitative research began. In practice regimes change constantly. Boundaries between routes and pathways and steps within each are negotiated in employment and education markets. Agency is exercised by firms, education and training providers and young people as well as governments. Some government initiatives may be rejected by the markets. Others may replace or merge into existing routes or find new space alongside routes that already exist (see Roberts, 2020, 2022). The value of any route is set by comparisons with adjacent routes, specifically in the family and educational backgrounds of those entering and their eventual employment destinations. As long as young people with the relevant presenting features continue to enter the route and eventually enter the expected types of employment, the route will be consolidated. If the character of its recruits and destinations of leavers change, the route will begin to disintegrate. All actors make choices, always within constraints, and some actors are more powerful than others. Causality tends to flow downwards, started by employers offering different classes of jobs to young people leaving different routes and pathways. These processes then work back to transitions from lower to upper secondary education, and before then from elementary to secondary schools.

Transatlantic Divide

We can now see that the TiY's original choice of countries among which to seek different types of regimes was too limited. Extend the range to America and we see a continuum with the USA's 'single procession' at one end and European countries' multi-track regimes bunched at the other, with Northern and North-West European countries closer to the American pole than the rest of Europe. This was noted independently but almost simultaneously by Gangl (2001) and Szydlik (2002). Transatlantic convergence is unlikely. The divide is rooted firmly in the different histories of education on the two continents. This is just one part of a wider transatlantic divide (Martinelli, 2007). The divide in education interfaces with the continents' welfare arrangements and approaches to labour market regulation.

Europe's oldest educational institutions that are still teaching have histories that began over 1000 years ago. These are universities which began as communities of scholarly monks. Their history as universities is said to have begun when they started taking students on a regular basis and have continued to do so ever since except for relatively short interruptions such as Europe's wars. On this criterion Bologna is the oldest university dating from the early 11th century, followed by Oxford towards the end of that century. The oldest secondary schools (present-day title) prepared students for university. These institutions prepared young males for religious vocations. During the Middle Ages other vocations were added: public service in the courts of Europe's sovereigns, princes and nobles, diplomacy and law. There were also schools, usually attached to churches, that provided an 'elementary' education for pupils with more

humble backgrounds and futures. All this preceded the formation of modern Europe's nation states (see Verdugo, 2014).

Governments stepped in and became leading actors in education when countries began to industrialise and urbanise. Elementary education was made universal and compulsory. Provisions for existing forms of 'academic' secondary education (the original vocational functions had been lost) expanded in existing schools and in entirely new public institutions of the same type. Despite curricula having become non-vocational, these schools and the universities to which they could lead became the normal route into older and modern professions in health care, science, technology, finance and engineering. Over time routes from elementary into the existing secondary schools were created, but not for all children. Progression always depended on a test of suitability. Other types of secondary education were invented to prepare pupils for work in factories, mines, shipbuilding and other modern occupations. There were differences from country-to-country in the ages at which cohorts were split, the proportions admitted to academic secondary schools, and the character of the alternatives which depended on local employment opportunities. The names of institutions and the qualifications that pupils gained were sometimes inherited from history and otherwise invented in each country or adopted from elsewhere. Hence the mosaic of present-day Europe's multi-track regimes (see Roberts, 2023). Their resilience can be seen in how, in East-Central Europe, different countries' institutions, qualifications and admission procedures endured throughout twentieth century communism from which countries emerged to resume their national histories (Gulczynska et al, 2023; Roberts et al, 2024).

America did things differently from the beginning of states' involvement, which was with elementary schools in the 1850s. There were existing elementary schools usually attached to churches. These were ignored. Public schools were secular and for all children. There were private European-type academic secondary schools and universities with 17th century origins. These were ignored when states began to create public high schools and colleges from the 1880s. High schools were for all children who had completed the elementary grades. Colleges admitted all high school graduates (Duncan and Goddard, 2005; Goode and Teller, 1973). Hence the single procession with drop-outs at various stages which over time have moved upwards from following elementary school, to during then after high school, then during college (Hillman N W, 2024). Today around 60 percent of America's high school graduates enrol in college. Around a quarter of these are entering community colleges which offer two-year programmes after which a 'junior degree' may be awarded. However, most entrants are aiming for a Bachelor degree which will involve transfer after two years to a degree awarding college. Only 14 percent of starter cohorts in community colleges have gained Bachelor degrees six years later. The 21st century trend has been away from two-year colleges towards direct progression from high school to four-year colleges (Hillman, N W, 2024). This has made America's single procession transition regime even more unlike Europe's regimes than formerly: the single procession remains intact for longer.

In 1960 Clark had noted how the manifest role of community colleges was to set students en route towards Bachelor degrees while their actual latent function was to cool-out over-heated ambitions (Clark, 1960) In America separation into distinct

career routes occurs after high school. In 1960 Turner noted how education in America kept students in a 'contest' for success for as long as possible. This contrasted with Britain (and we can now add other European countries) where those destined for success were selected earlier-on. Their progress upwards was then 'sponsored' by providing education leading to qualifications from which they could step off the top of the 'academic route' into corresponding occupational careers (Turner, 1960). Any divisions into pathways in American secondary education are within, not between schools of different types. Higher education institutions are ranked in an academic procession, placed according to entry standards. The procession is led by top graduate schools at top universities. They produce 'the cream of the crop' for whom employers offering top jobs compete (Katchadouria, 1994). Other employers must target lower ranked institutions (Streib, 2023).

European education landscapes are different. Students divide into different tracks before starting upper secondary education, usually at age 14 or 16 but sometimes earlier. Countries are bunched in a mosaic of national varieties of multi-track systems (Roberts, 2023). However, it is argued below that during the 21st century there has been a continent-wide drift in Europe towards, while remaining at considerable distance from, the American single procession pole.

Routes and Socio-demographic Groups

With hindsight we can see from previous experience that quantitative and qualitative enquiries, single country or comparative, which employ the transition regime concept need to focus initially on routes rather than selected socio-demographic groups (for examples see Bynner and Roberts, 1991; Evans and Heinz, 1994). This is preliminary to assessing how social divisions (by class, gender, ethnicity and others) play out within a country's transition regime.

Europe in the Twenty-first Century

The Degree Generation

No new Euro-wide routes have been created in the 21st century, but there have been many new pathways, most of them leading into or through higher education. The outcome has been a Euro-wide expansion of the academic route. This has made the term 'degree generation' familiar across Europe and beyond because the expansion has been global. Degree generation is the title of at least one book (Ingham et al, 2023). The term has multiple meanings. One is to claim (correctly in most European countries) that an academic career leading towards then into higher education has become of the largest single education-to-work route.

There is no definitive statistic on the numbers following this route in different countries. New student registrations can include international students and exclude students from the home country who have gone to universities elsewhere. There is also a difference between the numbers registering and leaving with degrees. Non-completion rates vary between European countries. The UK rate is exceptionally low

and (also exceptionally) declined from 15 percent of cohorts who entered in 2001-02 to 9 percent in 2019-20 (Hillman N, 2024).

Here we use the proportions of 25–34-year-olds with an ISCED Level 5 qualification or higher. ISCED stands for International Standard Classification of Education. The classification was proposed at an education conference in 1975 then endorsed by UNESCO in 1976. The classification has two columns – academic and vocational – and eight levels within each, creating 16 cells into which qualifications can be inserted. Level 3 represents matriculation to enter higher education. Level 6 is completion of a three-year degree (BA or BSc). Level 5 represents two years of a three-year degree course or a vocational qualification usually requiring two years full time study beyond Level 3. There may be European countries in which the majority of young people become university graduates. If so, they will from Belgium, Cyprus, France, Ireland, Lithuania, Luxembourg, the Netherlands, Norway and Switzerland. What else do these countries have in common? Nothing except that their nationally specific transition regimes produce cohorts with at least 50 percent possessing academic or vocational qualifications at ISCED 5 or above. There are huge inter-country differences within Europe. Italy and Romania have less than 30 percent of their 25–34-year-olds with an ISCED 5 or higher. The largest bunch of European countries are between 40 and 50 percent (Roberts et al, 2024).

Here we need to recognise that the placement of a qualification in an official scheme does not mean that all actors in education and labour markets will treat all qualifications within a level as equal. Universities may discriminate among Level 3 qualifications that they require for entry. Employers may discriminate between degrees awarded by different universities. This creates pathways within routes. Ultimately it is markets, not official classifiers, that confer value and create pathways while maintaining or weakening route boundaries.

Europe's academic secondary schools and universities used to be a 'Royal Highway' into top jobs. Expansion of the route has changed this. Students are more likely to regard a university degree as the minimum requirement for any decent and acceptable job. The meaning of these terms can vary from person-to-person, but at a minimum they will mean a permanent full-time job with prospects of career and salary progression to enable other youth life stage transitions to be completed, primarily new household and family formation. Universities are still a channel for upward mobility, but they are now equally likely to be seen as an insurance against social descent. As countries' middle classes expanded during the 20th century so did the numbers of young people at risk of descent (Bukodi et al, 2015).

It is not difficult to identify the main drivers of the expansion of higher education. These are young people and their families. The more modest the rewards that university graduates can expect, the less attractive the alternatives become as graduates compete for jobs formerly accessible from other routes (Mimina and Pavlenko, 2022). Employers have not been the main drivers. It is graduates who complain about shortages of jobs in which their expertise will be rewarded (Belfield et al, 2018; Bernadi, 2003; Cairns et al, 2014; Green and Henseke, 2021; Suleman and Figueredo, 2020). Employers do not complain about a shortage of graduates although they may complain that the products of higher education cannot offer the specific hard and soft skills that the businesses need. Graduates complain about feeling over-

qualified for the jobs that they are offered. They must ponder whether it will be better to wait or step down the labour market and accept a mismatch with their qualifications (Vobemer and Schuck, 2016). This applies to graduates in STEM subjects (science, technology, engineering and maths) as well as arts and social science graduates. Researchers have pronounced the death of human capital theory (Brown et al, 2020). The claim that the great global market knowledge economy would find uses for all the expertise that graduates can offer (Reich, 1990) has failed to deliver. Students may still act as true believers, but this may be because the alternatives at age 18/19 look even less attractive than the possibility, however small, of winning one of the 'glittering prizes'.

Young people and their families have been the main drivers, but other actors have been complicit in the expansion of the academic university route. Higher education institutions have willingly responded to increased demand. Older universities have expanded. Private universities have joined the marketplace. Other post-secondary institutions have upgraded to university status with degree awarding functions. Governments have provided increased funding, though during expansion more of the costs have been transferred onto students and their families. Nowadays the majority of Europe's full-time higher education students hold paid jobs during term times, usually part-time but sometimes full-time (Bozzetti et al, 2024). The student lifestyle is no longer a relaxed mix of lectures, tutorials, politics, sport and cultural activities. It is more often a hectic scramble to coordinate academic timetables and paid work schedules while maintaining contact with friends and families.

During expansion the number of degree awarding institutions has grown, and higher education has been stratified. Institutions and potential entrants know where they stand. Universities are stratified by their selectivity in recruitment – the prior attainments demanded of entrants – and by the careers to which their graduates progress. Students who enter lesser-known UK universities know that it will not be a version of Oxbridge. In the USA the great expansion to mass higher education happened in the 1960s and 70s (Habibi and Kamis, 2021). Students know the rank of their institutions and which employers will give their applications serious consideration (Streib, 2023). There is a global war for talent for the top graduates from top graduate schools (Brown and Hesketh, 2004). At the base of the academic procession it is more of a global (Dutch) auction in which the lowest graduate bidders win (Brown et al, 2011).

During expansion the social class gap in participation rates has narrowed in most countries, only to be replaced by class differences in the rank of the universities that they enter. The net effect everywhere is 'effectively maintained inequality' (Andrew, 2017; Becker, 2003).

Finally, employers have been complicit in the expansion of academic routes because they have the greatest power among all actors in the relevant marketplaces. Young people aim for university because 'graduate preferred' is attached to a widening range of job announcements. 'Technical qualifications preferred' would turn the tide towards different routes and pathways. Within the academic route new pathways have joined older ones. The latter include from top families to top secondary schools to top universities then to top jobs. This pathway enables top families to be reproduced from generation to generation (Reeves and Friedman, 2024).

Vocational Education and Training (VET)

The appeal of the academic route depends mainly but not only on the opportunities to which it leads. Every route is a comparator of and for others. The alternatives to the academic route include other routes through education and training. All are given the prefix 'vocational', however inappropriate. Officially they are all VET. Every European country has its own mix of these pathways which vary in the levels of qualification and employment to which they lead, their vocational specificity, and types and levels of employer involvement.

The expansion of the academic route poses challenges everywhere for institutions and professions that deliver the various forms of VET. These were once attractive options on account of their links with well-paid careers in mining and manufacturing. As these business sectors have declined in numbers employed, their historical associations with VET have become a handicap rather than a magnet. VET providers may find themselves in a downward spiral: reduced applications especially from young people with decent attainments in prior education, leading to less employer support. Employers may remain on committees that set syllabuses and learning targets while ceasing to offer workplace training to college-based young people. This downward spiral has been noted in Central and Eastern Europe's new market economies (see Kogan et al, 2011; Kogan and Unt, 2008; Noelke and Horn, 2014). In conditions of fiercer international and domestic competition, firms become unwilling to train beyond their own predicted employment and skill requirements. Their willingness to train is further eroded when skilled young employees leave and join other firms, maybe in another country (Evans et al, 2000). Sections of VET then become residual, training young people with no other options for no known occupational destinations (Pantea, 2020). This has happened to the third tier of secondary schools in Germany. In the 1950s the *Hauptschule* educated the majority of young Germans who exited at age 15/16 into apprenticeships. These schools now enrol just 15 percent of the age group who have become stigmatised as 'not fit for the mainstream' (Solga, 2002).

VET was always a diversion away from the very top occupations but it was also a safety net which reduced risks of unemployment (Shavit and Muller, 2000). It is still a diversion, sometimes straight to the bottom because it has lost the safety net compensation (Saar and Martma, 2021). A VET response to the evident appeal of the academic route has been to create an upper tier of apprentice pathways that can lead to Level 4 or 5 vocational qualifications or just to Level 3 which qualifies for entry to university (for examples see Protech and Solga, 2016; Roberts and Szumlicz, 1995).

The Oldest Route

There is an alternative to both VET and the academic route which should not be overlooked. Young people may be required to remain in education or training until a specified age, once 14, 15 or 16, but now typically 18 though this can be difficult to enforce, and there is usually no prohibition on them holding part-time or even full-time jobs. This third route, stepping directly from education into employment without any useful academic or vocational qualifications, should not be overlooked.

In 2019 the UK Children's Commissioner calculated that a fifth of young people were leaving education with 'nothing', meaning no qualifications that carried any weight in the labour market (Children's Commissioner, 2019). This fifth will include those who, despite the legal requirement since 2015, do not remain in full-time learning until age 18. In 2019 15 percent of 16- and 17-year-olds self-reported in Labour Force Surveys that they were not in full-time education. (Roberts, 2021). Some young people who continue to enrol in school or college do not achieve any 'useful' qualifications. They 'make their way' by job experience accumulation.

There are some regions of Europe in which VET simply will not sink roots. These regions are mostly in the Southern countries: Italy which was a founder member in 1957 of what became the EU, and Portugal, Spain and Greece which joined in the 1990s. The European Commission's preferred remedies for persistent high rates of youth unemployment, pioneered in the North, have been VET, preceded when necessary by remedial education. € millions have thrown VET at unemployment in Southern Europe. Failure to haul down the rates has not been due entirely to weak economies in de-industrialised and rural areas. There is simply no scope in the prevailing transition regimes for VET to be inserted. The measures simply reinforce young people's entrapment (Emmanouil et al, 2023). Southern countries are also exceptional in that higher education does not reduce risks of unemployment (Albert et al, 2023; Cairns et al, 2014; Morena and Mari-Klose, 2013; Suleman and Figueiredo, 2020). Relatively high youth unemployment rates are normal in countries with a mix of features that are most common in the South. These are high levels of seasonal employment in agriculture and tourism, family cultures which will support young people throughout extended life stage transitions into their late-20s and sometimes beyond, and acceptance of 'waiting' by all parties including employers. These mixtures resist efforts to insert VET into the transition regimes. European Commission prescribed VET becomes another 'waiting room' before recycling young people back to unemployment. The only routes that work are the academic route and the oldest route which is to step directly from school into the labour market after lower secondary education, sometimes later and sometimes before.

The Wider Twenty-first Century Context

Occupations, Careers and Labour Markets

Changes in Europe's economies, occupations, businesses and careers mesh easily with single procession transition regimes. In a limited number of occupations it has been and remains essential to enter with a higher education qualification in a specific discipline. Most of the relevant occupations are in health care, law, teaching, research and engineering. However, even in these occupations most job skills are acquired in employment, in workplaces, not in classrooms. Training may be completed quickly, within months or even weeks, or skill acquisition may be career long. In the latter cases careers will lead up 'ladders' to higher levels of status, salary and authority. Skill acquisition may be front-loaded as in European apprenticeships. These have never been solely about skills. They have enabled those fully qualified in a craft to police

entry and standards of workmanship, thereby becoming 'partners' of employers and other crafts. The occupations thereby become vocations. This works well only in occupations and large firms, small businesses and self-employment which can be relied on to outlast a working life.

Apprenticeships were never adopted widely in the USA. They were among the parts of the old world, like monarchs and nobles, that the new world considered itself better-off without. Occupational training in America has been incremental in both offices and factories. Novices learn and practice specific job skills quickly, become productive for their employers, and can then move on to acquire more skills which make them even more productive and valuable to their firms. The threat to the European apprenticeship model is that in the post-industrial 21st century, ICT age, everything has become fragile – liquid according to Bauman (2006), risky according to Beck (1992).

Employment in manufacturing and extractive industries has declined across Europe and North America. These are the sectors which created most apprenticeships. Their decline has been bad for VET. ICT has changed office, professional and management occupations. All have become less 'solid'. Firms do not seek recruits with fixed skill-sets. They want recruits who are 'smart', quick to learn. The best indicators of 'smartness', judged by employment and labour markets, are academic qualifications. Extra-curricular cultural, sport and political activities can enhance CVs if they offer evidence of 'soft skills' – teamwork and leadership. This explains the appeal of the academic route to young people and why employers prefer university graduates, whatever their disciplines, to applicants with occupation-specific VET qualifications.

Major multi-national corporations may still present graduate applicants with the prospect of long progressive careers in the companies, but they do not expect most recruits to remain for long. Indeed, they find that recruits tend to move on voluntarily after a few years. They move to businesses into which their skills can be transferred and added to, and where they may be able to move up faster. Young graduates engage in experience accumulation. When they are unable to move-up they will jump. If they stay immobile for too long they may find themselves pushed out.

These are the changes that have pushed Europe's transition regimes towards the American single procession. There are jobs for young people who reach the top of their countries' education regimes, and also for those who drop out of school early, or in which students can work part-time. These jobs are in warehouses, retail, hospitality and delivering by foot, bicycle or motorised transport.

There are question marks against the sustainability of the new 21st century personal portfolio careers. At the start of 'prime/mid working life' (30-50) many young adults have still not achieved the salaries or employment security required to finish their life stage transitions with new household and family formation. At the other end of 'prime' working life staff may find that their experience and skills are of diminishing value. Earlier in the UK it was employees in manufacturing and extractive industries who faced tattered, undignified ends to their working lives (Harris, 1987; Westergard et al, 1989; Young and Schuller, 1991). This blight has now spread into management and professional careers. Staff aged 50 and above who have ceased 'moving up' find themselves being eased out to make room for younger cheaper staff. Those eased out may have private pension funds, but these are unlikely

to sustain standards of living for 30-plus years (Riach and Loretto, 2009). Displaced managers and professionals are unlikely to relish taking lower skill, lower salary jobs which would blight their identities. The mid-2020s scare is AI replacing management and professional judgement as well as more routine office jobs.

Europe in a Global Context

One way to judge how well a transition regime is performing is comparisons with other countries. For Europe the most appropriate comparators are other large, economically advanced countries. Here we use Australia, Japan and the USA. The most suitable performance indicators for which the necessary data are available are employment and unemployment rates, and also GDP per capita. The data used below are from EUROSTAT, the OECD, and the World Bank.

Europe's employment rate (16–64-year-olds) was 75.4 percent in 2023. This put Europe ahead of the USA (72 percent), but behind Australia (77.6 percent) and Japan (77.9 percent). Europe's employment rate has been rising in the 21st century among men and women and in all age groups from 16-24 up to 55-64. Needless to say, there are inter-country differences in employment rates within Europe, from Italy on 66.3 percent to the Netherlands (83.5 percent). Europe's unemployment rates look less satisfactory: 6.0 percent overall in 2024 compared with 3.8 percent in the USA, 3.4 percent in Australia and 2.6 percent in Japan. Youth unemployment rates (16-24) are higher in all the countries, but do not change the rank order: 14.8 percent in Europe, 9.6 percent in Australia, 7.9 percent in the USA and 3.8 percent in Japan.

On GDP per capita in 2023 Europe was alongside Japan (both \$34K) but well behind Australia (60K) and the USA (\$64 K). The EU's statisticians estimate that 21.9 percent of Europe's workforce is over-qualified for their occupations. An inference is that Europe's transition regimes feed into economies that are under-performing, failing to use the human capital that is at their disposal. The result is that more young European job-seekers are unemployed and those in employment are less productive than in comparator countries. Europe is certainly not a global disaster zone but could do better.

Limitations

One limitation of this paper is due to the absence of ideal data on youth transitions. These would be internationally harmonised longitudinal studies of young people's movements from lower secondary education until established in employment. Time series stretching backwards for decades would be required.

A second limitation is that the analysis is confined to Western countries, albeit expanded to include East-Central Europe. Identifying transition regimes in Asia and the rest of the Global South will undoubtedly require adding to the Europe-America, multi-track versus single procession axis.

Conclusions

Faced with its limitations, the disparate evidence used above demonstrates the power of a transition regime lens in identifying:

- The main direction of change in Europe: towards American-type single processions.
- The main drivers of change: young people and their families.
- The accommodators and facilitators: universities that are willing to expand, and employers who take advantage of the unincreased supply to widen the levels of employment for which university degrees are required or preferred.
- The main losers: VET providers.

These conclusions vindicate the use of the transition regime concept. Routes and pathways are not being deconstructed by yo-yoing and other haphazard decisions and movements by employers and young people. The conclusions demonstrate the value which is added by attaching America to intra-European comparisons, and by treating regimes as constantly negotiable rather than rigid and static. Employers have the ultimate power to decide who enters groups of occupations. However, the preferences of young people can allow some education and training providers to expand their routes and pathways, while others are starved of entrants. Future developments need to be tracked and ideally the rest of the world needs to be included to discover whether trends in Europe in the early 21st century continue, and spread globally, as we head towards the mid-century.

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Reimagining Emancipation in Norwegian Naval Leadership Education and Practice — A Reflective Practice Approach

*By Johan Bergh**

Naval leadership education at the Royal Norwegian Naval Academy (RNA) has changed significantly over the past decades. In this paper, some Personal Experiential Phenomena from a Military perspective and possible notions of, or differences in Norwegian Naval Leadership Education past and present were examined. Firstly, the article relied mainly on the Brazilian educator and philosopher Paulo Freire's authorship as a basis for original and critical reflections. Reflective Practitioners use this process to modify and enhance their understanding of Professional Practice. The initial approach in this article was based on the Reflective Practice Research Method. "Which contributes to educators' professional development and personal growth". But knowledge of reflective methods alone are not sufficient. This article therefore also employed results from a survey conducted at RNA. Thus, mixed methods were adopted for the study to create a bridge between Personal Reflections and recent findings. Therefore, the survey among today's Cadets, this paper may shed new light on Naval Leadership Education from both learners' and educators' perspectives. It would thus also have relevance for civilian educators within the field of Leadership Education and -studies.

Keywords: formation, higher education, liberation, military leadership, oppression

Introduction

Educational practices are not everlasting, but change over time (e.g., Hargreaves & Goodson, 2006). The purpose and goals of this paper was firstly to reflect on personal educational experiences in my time as a Cadet at the RNA. Also, it aimed to explore educational Naval Leadership education with recent examples from the RNA. As this was explored, Gloria Jean Watkins aka bell Hooks (2010) was a reference point. She claimed that "learning requires openness and willingness to engage with new possibilities" (p. 187). My own learning experiences at the RNA have raised several questions in me. What can I say about learning in a Military Leadership educational setting? Is it, for example, stuck in former practice? Is it oppressive or liberating? I therefore firstly revisited my own Leadership Learning and Education through critical pedagogic lenses by engaging with the Brazilian author Paulo Freire's (2000; 2005) works.

Thereafter, I explored and discussed possible notions of, or differences in Norwegian Naval Leadership Education then and now. My overarching research question was: "Does it seem to be differences between Norwegian Naval Leadership Education at the RNA now and then?" In addition I wanted to explore how today's Cadets perceive their own perspectives of recent Leadership Education. Through this,

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I wanted to compare my own Leadership Education with what today's Cadets perceive in order to clarify any possible differences.

Terjesen and Gjelsten (2017) claims that Higher Naval Leadership Education in Norway has changed significantly over the past decades (Author's translation). Akbari (2007) suggested that reflective teaching will make teachers question clichés that they have learned during their formative years and will also enable them to develop a more informed practice. Reflective Practice is a process of systematic awareness to self-analyse and self-assess own practice in order to design new strategies that can enhance teaching (Habib, 2017). As Norwegian commissioned naval officers are also teachers for younger officers and NCOs,² this also applies to them. Probably also for teachers in Civilian Higher Educational Institutions.

My personal experiences with Naval Leadership Education began in 1982 and thus barely preceded the arrival of Schön's (1983) explicit naming of "The Reflective Practitioner" as a goal for education in the professions. Kolb (1984) drew attention to the fact that when we want to learn from something that has already happened to us, we need to recall our observations of the event and then reflect on those observations in some way. He also suggested that we frame some action as a result and that this possible course of action is seen as our 'learning'. This will then inform any action we take resulting from the experience. Through this, I may come to a deeper understanding of specific experiential phenomena I have encountered.

Freire (2005) stated: "Who suffer the effects of oppression more than the oppressed? Who can better understand the necessity of liberation? They will not gain this liberation by chance but through the praxis of their quest for it, through their recognition of the necessity to fight for it" (p. 45).

With this introduction, I initially reflected on some personal experiential phenomena as a Commissioned Military Officer, Educator, Supervisor, and Leader by the concept of Reflective Practice Research (e.g., Habib, 2017; Lindseth, 2020). It was not my intention to either challenge or question Freire but rather to have a dialogue with him. Applied research, practically founded, is normal science, research which is based on the prevailing paradigm without threatening it (Freely after Thomas Kuhn. In Lindseth, 2020, p. 77).

However, there is one particular incident that deserves attention. In 1986, the Vassdalen Disaster happened, where 16 drafted soldiers were killed in an avalanche. At that time, Leadership in the Norwegian Armed Forces (NAF) was mostly order-based. To put it somewhat extremely, you were to follow orders and not question them. This changed dramatically after this tragic disaster (e.g., Norwegian Ministry of Justice, 1986, p. 20; Norwegian Ministry of Defence, 1991, p. 19). Luckily, one might say, the Vassdalen Disaster spawned a wide-ranging debate. The debate eventually resulted in what is called the Reform of the Norwegian Military Leadership, which addressed the organizational structure of the Military, its organizational culture, procedures, and Leadership ideals. The solution to the above-mentioned challenges was the Leadership philosophy, *Oppdragsbasert Ledelse* (OBL/mission command). This, in turn, would also influence Norwegian Military Leadership Education (e.g.,

²Non-commissioned officers.

Olsen, 2017). Probably for the better by introducing broader participation and acceptance of voice (Hirschman, 1970) in decision-making and Leadership processes.

Even if this paper has a slight list towards Military Education, it may still have relevance for both Military and civilian teaching practitioners in the sense that it may put their own practice to the test of Reflection. The following section includes a literature review and short descriptions of essential concepts for this paper. The next sections discuss Naval Leadership Education in Norway including original and critical reflections. Thereafter, the following sections discussed Communities of Practice and Methodology, and finally the survey results. The last sections provide a general discussion with educational implications, followed by recommendations, limitations, and acknowledgements.

Literature Review

Reflective Practice Research

According to Lindseth (2020), Reflective Practice Research can be directed towards other people's experiences; then it becomes a challenge to get them to talk, so that they begin to reflect and wonder about their own experience and understanding. But research can also be usefully based on their own experiences of – and stories about – being challenged in activities and life contexts (p. 80, author's translation). Reflective Practice may be regarded as one of the ways that professionals learn from experience to understand and develop their practice (Jasper, 2003). The concept of reflection and the reflective practitioner has exerted a strong influence on the development of professional education (Clegg, Tan, & Saedid, 2002). According to Ginsburg (1988), reflective practitioners use this process to modify and enhance their understanding of professional practice. But knowledge of reflective methods alone is not sufficient. There must be a union of skilled method with attitudes (Van Manen, 1996).

Communities of Practice

Communities of Practice (CoPs) have been described by Wenger (1999) and others as a type of informal learning organization. The CoP was originally developed to provide a template for examining the learning that happens among practitioners in a social environment (Li et al., 2009). They suggest that the CoP is still an evolving concept. Wenger's description seems therefore to apply to both Military Learning and Practice Communities because learning and practice are inextricably intertwined as indicated above.

Naval Leadership Education in Norway

Norwegian Naval Officers have been educated and formed at the Royal Norwegian Naval Academy for more than 200 years (Terjesen & Gjelsten, 2017, author's translation). RNA educates becoming commissioned officers for the

Norwegian Navy. Role models at the RNA are linked to their own formation (*bildung*) (e.g., Klafki, 2007), culture, and practice. Leadership is also thought critical to innovation in schools (Spillane, Halverson, & Diamond, 2007). Role models may be regarded as liberators or hindrances in a military “Community of Practice” (CoP) (Wenger, 1999). Midshipmen³ (aka Cadets) are a part of such a community through four years of learning and *bildung* processes. These processes may also be considered to take place in a Community of Learning (CoL) (Chapman, Ramondt, & Smiley, 2005). Both CoPs and CoLs are thus significant arenas for learning Military Leadership. The RNA provides both arenas. Through four years of academic studies and extensive Leadership education, training, and practice, Norwegian Midshipmen are formed into professional CoPs and CoLs, at least in theory. I therefore explored this further.

Norwegian Military Professionalism can be regarded as our professional identity and constitutes a set of preferred goals, values, and attitudes in the organization (Johansen, 2019 pp. 139-140, author's translation). The Military Professional Culture in Norway was first commented on in the Chief of Defence's foreword to the Joint Operational Doctrine for The Norwegian Armed Forces (FFOD) in 2007. It has since gained a cultural foothold which is frequently referred to (Johansen, 2019, p. 139, author's translation). The concept or understanding of Norwegian Military Professionalism has also changed significantly after the above-mentioned version of FFOD was published in 2007 (Lunde, 2021).

Professional identity development, such as through the exploration of possible new identities (Ibarra, 1999) or self-awareness processes (e.g., Hall, 2002), occurs over the course of time. The development of Professional Identities occurs as a natural by-product of a progression through each career phase (Dobrow & Higgins, 2005). Career research has found that people actively develop their identities through acquiring the ability to process feedback about the self and achieve self-awareness (Hall, 2002). At the RNA, Midshipmen learn about effective Military Leadership through studies of literature and also practical training. In this sense, they have an opportunity to engage in fruitful conversation and critical reflection with their peers and teachers about multiple aspects of their dawning professional identity. Because, in The Basic Pedagogical View of the Norwegian Armed Forces (Norwegian Defence College, 2006), it is stated that one of the main purposes of Military Education is to develop “a critical reflective professional competence with the personnel” (p. 17, author's translation). This coincides with Schön's (1983) explicit naming of “The Reflective Practitioner”.

As Military educators, I believe we therefore are obliged to liberate our students. As Freire (2000) puts it: “We should devote ourselves humbly but perseveringly to our profession in all its aspects: scientific formation, ethical rectitude, respect for others, coherence, a capacity to live with and learn from what is different, and an ability to relate to others without letting our ill-humor or our antipathy get in the way of our balanced judgment” (p. 24). The RNA's Leadership philosophy (Olsen & Espesvik, 2009), states this: “Counselling and systematic reflection play a key role in achieving cognitive and emotional maturity” (p. 8, author's translation). Also: “An essential pillar in cohesion is trust...The importance of trust and how trust is built and

³Officer Candidates at RNA.

lost is, therefore, a necessary part of officer education" (pp. 58-59). These quotes may well illustrate which reality the RNA operates within. However, that has not always been the case. Let me therefore exemplify and reflect.

My Naval Leadership Education — Original Reflection

The purpose of this section is to elaborate and reflect on my experiences with Military Leadership Education at the RNA and later as a Commissioned Officer. Some experiences made lasting impressions. RNA was not entirely what I envisioned. Let me first point out: Some of our Military teachers also oversaw certain administrative and managerial tasks in addition to being teachers in certain subjects. However, they were also Role Models in the sense of having higher ranks, such as Lieutenant Commanders and above. In other words, they had Positional Power (e.g., Van den Brink & Steffen, 2007). In this sense, there were dominance relationships between 'us' and 'them'. At the RNA, we were mostly instructed to follow orders without questions. We were, however, somewhat sceptical of some of our Military teachers. Others, however, could engage us in fruitful dialogue, conversations, and discussions. I am grateful for that. I recall one of our Officers in our second year who was relatively strict and uncompromising in his behavior. By pulling rank instead of engaging us in meaningful dialogical learning activities, he imposed his own narrow views on us, which we were not happy with. He oppressed us instead of liberating our hearts and minds. I will again return to Freire (2005): "the oppressed must see themselves as women and men engaged in the ontological and historical vocation of becoming more fully human" (pp. 65-66). Were we not supposed to become a better version of ourselves at the RNA?

As "oppressed", we did not tolerate his actions. Because "when the situation calls for action, that action will constitute an authentic praxis only if its consequences become the object of critical reflection. In this sense, the praxis is the new *raison d'être* of the oppressed" (Freire, 2005, p. 66). His actions as "oppressor" became, for us, a possibility to engage in liberating actions. At that time, in 1984, this was unheard of. I believe, as Freire, that he did not trust us to be Reflective students. Still, "It is necessary to trust in the oppressed and in their ability to reason. Whoever lacks this trust will fail to initiate (or will abandon) dialogue, reflection, and communication, and will fall into using slogans, communiques, monologues, and instructions" (Freire, 2005). That was exactly what he did. He imposed his 'reality' on us in the same way as he probably mirrored the military society at that time. As Freire exemplifies:

- a. the teacher teaches, and the students are taught;
- b. the teacher knows everything, and the students know nothing;
- c. the teacher thinks, and the students are thought about;
- d. the teacher talks, and the students listen—meekly;
- e. the teacher disciplines, and the students are disciplined;
- f. the teacher chooses and enforces his choice, and the students comply (2005, p. 73).

I shall return to what happened next. As I mentioned, we were not at all happy with his oppressive actions. So, we decided to take swift action. Our class therefore wrote a note to the RNA's Management, in which we explained our concerns about this officer and his Teaching and Leadership methods. We were concerned that they were unsound. I recall this: We were initially met with a sort of indulgence. You couldn't really mean this? He was, after all in their view, a highly respected officer. In our opinion though, he loved control, and in the act of controlling, he killed life (Freely after Fromm, in Freire, 2005, p. 68). But "though I know that things can get worse, I also know that I am able to intervene to improve them" (Freire, 2000, p. 53).

What was at stake? It was our very *conscientização* (critical consciousness). For us, as for Freire (2005), this was about learning to perceive social contradictions and to take action against the oppressive elements of reality (p. 35). As such, we were maybe rebels in our time. First, however, we asked the Management for a joint meeting with our class. As they had received our note, we confronted them with our concerns. As we expected, the Management did not at all believe us. I remember one of my classmates standing up in response and shouting something like this: "Well, you weren't here were you! But we were, and we tell you the truth!" The room fell cold and silent. Nevertheless, our note and the meeting afterwards spawned a few significant changes to our life at the RNA. We experienced enhanced dialogue, contrary to mere instruction or indoctrination. We also noticed that older Midshipmen became more lenient in their dealings with us younger ones. We could simply notice a change in attitude towards us. I will connect this to Freire (2005) again: "Human beings are not built in silence, but in word, in work, in action-reflection" (p. 88). By means of a totality of reflection and action, we were no longer afraid.

As for dialogue and action-reflection, we may consider this as an act of creation; it must not serve as a crafty instrument for the domination of one person by another (p. 89). That was exactly what we did; we transformed a perceived 'reality' into something different and better—for many. We reclaimed our right to speak our word and thus engaged in the liberation of ourselves and our fellow Midshipmen. We considered Dialogue as being imperative in this and necessary for such an achievement. Dialogue was simply an existential necessity; it imposed itself as the way by which we achieved significance as human beings (Freely after Freire, 2005, p. 88). To express this feeling, I quote Ellis "Red" Redding: "We were the lords of all creation"⁴. But how may all this relate to a Military Community of Learning? I will therefore in the next section critically reflect on some issues regarding my Military Leadership Education. According to Dewey (1933), reflection is aimed at dealing with a confusing or problematic situation. My reflections may therefore be relevant for shedding light on Naval Leadership Education past and present.

⁴Quote from the film: The Shawshank Redemption, 1994.

Critical Reflections

The term “Learning Community” became popular among educators in the 1990s (Graves, 1992). Communities of learning (CoLs) can be regarded as a collection of individuals working in close proximity, sharing a common purpose and passion—a desire to learn (Collarbone, 2001). This may well apply to Cadets at the RNA. Because people learn material faster and have a better attitude towards learning material when they learn in a participative environment (Vygotsky & Cole, 1978; Bruner, 1986). At the RNA, midshipmen are together most of their time on campus or at sea. Learning in such a community, the person who is being taught may therefore also be formed in this process. Critical reflections call to question the power relationships that allow, or promote, one set of practices considered to be technically effective. It assumes that the minutiae of practice have embedded within them the struggles between unequal interests and groups that exist in the wider world (Brookfield, 2009). Formation, as I mentioned earlier, is firmly embedded in the Norwegian military leadership education. This was not entirely the case before the Vassdalen disaster.

In 1982, when I was admitted to the RNA, I had one and a half years of previous Military service as a Private, a Corporal, and later briefly as a platoon NCO. In this period before RNA, I encountered several different personalities and educational environments. Being a learner, who I was—and still am, I am continuously in the process of acquiring new knowledge. This new knowledge cannot simply be directly transferred to the learners. By recognizing only the explicit character of knowledge, we underestimate the true effort required to transfer knowledge (Roux et al., 2006). Therefore, the transfer of knowledge can be regarded as a collective process in which the educator and the student engage in fruitful dialogue. Or, as Freire (2005) puts it: “The teacher is no longer merely the-one-who-teaches, but one who is himself taught in dialogue with the students, who in turn while being taught also to teach” (p. 80).

I find it somewhat difficult to impose my views on others. I can only tell others of my experiences. They are and will always be mine and can thus never be challenged. By merely imposing existing structure and views on the world, we cannot achieve true learning. We cannot engage in “the hypocritical formula, “do as I say, not as I do” (Freire, 2000, p. 39). I believe Military teachers in higher educational institutions are obliged to liberate both themselves and those they educate. This must be paramount for all Officers regardless of where and when they serve. “Since liberation must be a permanent condition, dialogue becomes a continuing aspect of liberating action” (Freire, 2005, p. 139).

I seek enlightenment through learning in a sense somewhat similar to how Freire (2000) states: “Why not, for example, take advantage of the students' experience of life” (p. 36). Engaging in both my own experienced phenomena and their own perceptions, through dialogue, they and I may come to a deeper understanding of different implications of multiple perspectives of the experienced world. To exist, humanly, is to name the world, to change it (Freire, 2005, p. 88). Also, “by naming the world, transform it, dialogue imposes itself as the way by which they achieve significance as human beings” (Freire, 2005, p. 88). This, I believe, signifies the dichotomy between the ‘narrower’ banking education, which resists dialogue, and a

dialogical approach in which the dialoguers engage in critical thinking. Critical thinking which perceives reality as process, as transformation, rather than as a static entity—thinking which does not separate itself from action, but constantly immerses itself in temporality without fear of the risks involved (Freire, 2005, p. 92).

Turning to the RNA again, two purposes of Leadership development are not to think and act “correctly” but instead to “be in a space without foothold” (Freire, 2000, p. 69). Leadership Training Programs can be defined as programs that have been systematically designed to enhance leader knowledge, skills, abilities, and other components (Day, 2000). Also, “A learning environment characterized by support, where the counselled feels safe enough to try the insecure and is allowed to fail” (Day, 2000). “To learn effectively demands that one involve oneself totally in new experiences, openly without biases” (p. 70). However, are we not all biased in one way or another, either cognitively and/or emotionally? What complicates it further is the fact that we are all different. That is, all midshipmen also learn differently (e.g., Pashler et al., 2008). This is so even if the RNA strives to “Improve them to create a future reality” (Olsen & Espevik, 2009, p. 72. Author’s translation). Again, this calls for an enhanced understanding of perceived limitations. Which implications lie then for Military Communities of Practice?

Military Communities of Practice

As Wenger (1999) describes, the CoP can be regarded as an entity bounded by three interrelated dimensions: mutual engagement, joint enterprise, and a shared repertoire. Mutual engagement represents the interaction between individuals that leads to the creation of shared meaning on issues or a problem. Joint enterprise is the process in which people are engaged and working together towards a common goal. Finally, shared repertoire refers to the common resources and jargon that members use to negotiate meaning and facilitate learning within the group (Li et al., 2009).

As stated in the RNA’s Leadership Development Philosophy (Olsen & Espevik, 2009): “Man is learning by constructing his knowledge in interaction with his environment”. Also, “Man plays therefore an active and decisive role in developing, organizing, and apply knowledge” (p. 68. Author’s translation). This again fits with The Basic Pedagogical View of the Norwegian Armed Forces (FPG, Norwegian Defence College, 2006), which states that “Learning is an interactive process that consists of interpreting, integrating, and adapting new knowledge to the knowledge you already have” (p. 4, author’s translation). Also, “Learning takes place in a context, in the interaction between people, in the meeting with texts and other sources and in confrontation with concrete relationships and situations. Here the participants must be open for an active exchange of views and dialogue” (p. 5).

Let me therefore elaborate. Firstly, let me return to one of the main goals of FPG, which is to “Develop a critical reflective professional competence with the personnel” (2006, p. 9, author’s translation). Alternatively, put in other words, the goal is to create Reflective Practitioners. This demands, as Freire (2005) states, “Dialogue, which requires critical thinking, is also capable of generating critical thinking. Without

dialogue there is no communication, and without communication there can be no true education" (pp. 92-93). Secondly, if we, as Military teachers, are to liberate our students' perceptions of their practical reality (as we should, author's note), we must also engage them in fruitful conversation and dialogue to create shared meanings on issues or problems. Thirdly, by facilitating joint enterprises, we must realize that their view of the world, manifested variously in their action, reflects their situation in the world (Freire, 2005, p. 96).

My experiences at the RNA differ somewhat from the above. I mean, for one reason that we were subjugated as uncompleted beings. As such, we may also claim that we were unable to decide for ourselves, unable to objectify either ourselves or our activity, lacking objectives which they themselves have set, living "submerged" in a world to which they can give no meaning, lacking a "tomorrow" and a "today" because we existed in an overwhelming present (after Freire, 2005 p. 98). As nascent practitioners, this was problematic because we were, as Freire also states, "Humans, ... because they are aware of themselves and thus of the world—because they are conscious beings—exist in a dialectical relationship between the determination of limits and their own freedom" (Freire, 2005, p. 99). This lead me to the next section of this article, which is a study concerning the cadet's subjective perspectives on recent Naval Leadership Education at the RNA. The next section expands on and complements my previous reflections. At this point, there seemed to be scarce research concerning Norwegian Cadets' subjective perception of recent Naval Leadership Education. Therefore, a survey at the RNA seemed to be relevant as one part of the mixed method research methodology.

Mixed methods research is defined as a combination of qualitative and quantitative methods conducted by a researcher or researcher team, for the broad purpose of gaining breadth and depth of understanding or corroboration, within a single study or closely related studies (Johnson, Onwuegbuzie, & Turner, 2007). Mixed methods are still developing and will do so for years to come (Tashakkori & Creswell, 2007). The mixed methods approach "can produce more robust measures of association while explicitly valuing the depth of research participants' experiences, perspectives, and histories" (Ritchie & Lewis, 2003, p. 463). The present study includes a sample of cadets at the RNA by gathering individual responses from them by distributing an online survey using MS Forms – a quantitative method (e.g., Kral & Allen, 2016). A total of 53 cadets at the RNA were asked to participate; a total of 45 Cadets completed the questionnaire (a response rate of approx. 85%). The research questions were designed using an amended or Likert-type scale (Chen, Lee, & Stevenson, 1995; Grandy, 1996; Warmbrod, 2014). A Likert-type scale consists of a series of statements defining and describing the construct's content and meaning (Warmbrod, 2014).

Methodology

Participants and Design

Qualitative methods help provide rich descriptions of phenomena. They enhance understanding of the context of events as well as the events themselves. Thus, qualitative research not only serves the desire to describe; it also helps move inquiry toward more meaningful explanations (Sofaer, 1999). The present study includes a sample of cadets⁵ at the RNA by gathering individual responses from them. A total of 53 cadets at the RNA were asked to participate; a total of 45 cadets completed the questionnaire (a response rate of approx. 85%). The research questions were designed using an amended or Likert-type scale (Chen, Lee, & Stevenson, 1995; Grandy, 1996; Warmbrod, 2014). A Likert-type scale consists of a series of statements defining and describing the construct's content and meaning (Warmbrod, 2014). The specific research questions were developed and designed based on three normative documents which both educators and learners at the RNA were supposed to be familiar with; The Basic Pedagogical view of The Norwegian Armed Forces (2006), The leadership and Training Philosophy of the Royal Norwegian Naval Academy (Olsen & Espen, 2009), and The Norwegian Chief of Defence's view on Leadership (Norwegian Defence Staff, 2012).

The questionnaire underwent initial revisions following suggestions by the head of military leadership at the RNA. Following additional feedback from professors at the RNA, final revisions were made to the survey. No data concerning age, gender, etc. was collected. Thus, the survey was completely anonymous. The participants completed a survey consisting of 16 statements. Two example statements were “Operative Leadership is often discussed between us cadets” and “I am very familiar with Mission Command (OBL)”. The scale had seven response alternatives ranging from alternative 1-strongly agree to alternative 7-strongly disagree.

Procedures

The research committee at the Norwegian Defence College University (NDUC), the RNA, and the Norwegian Agency for Shared Services in Education and Research (Sikt) approved the study (Sikt-ref. 954463). After final revisions of the survey questionnaire, RNA provided additional comments about the survey's validity. One might therefore claim that the survey was satisfactory piloted. Before data collection, we prepared an informed consent procedure. The RNA and the participants received written information about the study's main purpose and were informed that participation was voluntary and that they could withdraw at any time. They were also assured that individual results would only be used in this specific research project. Also, consent was embedded in the questionnaire.

Data from the Cadets at RNA were collected after they had finished respectively two and three years of extensive team-based Leadership training. Data from the Cadets at RNA were collected three months before they completed their education programs. During their training, all Cadets had rotated in roles as leaders and followers

⁵Military students at the RNA = midshipmen.

in fixed teams and participated in numerous joint exercises and group sessions. These activities provided them with thorough knowledge of each other in Leadership roles and as team members (e.g., Olsen, Johansen, & Hystad, 2021). They also have extensive theoretical education in Military Leadership.

The following section contains results from the survey at RNA. Quantitative data can be measured, more or less accurately because it contains some form of magnitude, usually expressed in numbers (Walliman, 2021). First, the phenomena under study were described as precisely as possible. I then needed to be able to interpret and explain the data. Also, a conceptual framework needed to be developed and data classified. Afterwards, concepts were built and connected to each other. In this way, the research questions were aligned with the overall purpose of the present study.

Results

As mentioned above, my overarching research question was: “Does it seem to be differences between Norwegian Naval Leadership Education at the RNA now and then?” In addition I wanted to explore how today’s Cadets perceive their perspectives of their own Leadership Education. Quantitative survey results from RNA are listed in Table 1. Each question had two extremes, at 1 and 7, respectively, as mentioned above. My main purpose for the research was to explore today’s Cadets’ subjective perceptions of their leadership education and what the RNA emphasizes and/or practice. The second purpose was to explore their perception or the notion of formation (*bildung*). Another aim was to assess their knowledge or understanding of Mission Command (OBL). It is, therefore, necessary to categorize the survey questions. In Table 1, the questions are therefore clustered.

Table 1. Answers Provided by Cadets at the RNA

General Perception of the Leadership Education at RNA							
	<u>Strongly agree</u>	<u>Alt. 2</u>	<u>Alt. 3</u>	<u>Alt. 4</u>	<u>Alt. 5</u>	<u>Alt. 6</u>	<u>Strongly disagree</u>
Q3	2.2%	8.9%	40%	35.6%	11.1%	2.2%	0%
Q7	2.2%	6.7%	15.6%	24.4%	33.3%	11.1%	6.7%
Q8	4.4%	0%	4.4%	17.8%	24.4%	33.3%	15.6%
Q9	2.2%	8.9%	6.7%	15.6%	40%	22.2%	4.4%
Q12	0%	6.7%	15.6%	28.9%	40%	8.9%	0%
Q13	0%	8.9%	6.7%	11.1%	37.8%	31.1%	4.4%
Q14	4.4%	11.1%	13.3%	22.2%	40%	6.7%	2.2%
Q16	0%	2.2%	13.3%	15.6%	31.1%	24.4%	13.3%
Knowledge and Understanding of RNA’s Leadership Philosophy							
Q1	0%	8.9%	11.1%	17.8%	37.8%	22.2%	2.2%
Q2	6.7%	8.9%	35.6%	33.3%	13.3%	0%	2.2%
Q10	0%	0%	0%	0%	22.2%	44.4%	33.3%
Perception of Connections Between RNAs Education and Practice							
Q4	13.3%	8.9%	22.2%	33.3%	20%	0%	2.2%
Q6	4.4%	13.3%	11.1%	31.1%	31.1%	8.9%	0%
Q11	6.7%	11.1%	13.3%	20%	35.6%	8.9%	4.4%
Perceived Effects of Being a Cadet							
Q5	2.2%	11.1%	35.6%	24.4%	24.4%	2.2%	0%
Q15	0%	2.2%	15.6%	51.1%	20%	6.7%	4.4%

The first and principal category is the Cadet's perception of RNA's Leadership Education, as stated in questions (Q) 3, 7–9, 12–14 and 16. The second category is the Cadet's knowledge and understanding of RNA's Leadership Philosophy, as stated in Qs 1, 2, and 10. The third category is the Cadet's perception of any connections between RNA's education and practice, as stated in Qs 4, 6, and 11. Qs 5 and 15 refer to their perceived effects of being a Cadet at the RNA. This concerns the extent to which the Cadets perceive being measured according to their leadership qualities and whether they perceive being "bound" or inhibited by existing Leadership praxis. Subsequently, I found the following:

Their general perception of leadership education stands out fairly clearly. A high percentage of the cadets perceive that Leadership Education, to a high degree, is characterized by openness, the emphasis on Reflection and Learning, and the freedom to think for themselves (Q 7-9). The Cadets also perceive high degrees of compliance between theory and practice in the educational setting, independent thinking, and freedom and independence (Q 12-14). When it comes to teaching Operative Leadership (Q 3), the responses became somewhat different, indicating that they are more unsure. Q 16 indicates clearly that the Cadets perceive that it is emphasized that they are to become Reflective Practitioners. Regarding knowledge and understanding of RNA's Leadership Philosophy, the Cadets perceive a good understanding of RNA's Leadership Philosophy but seem to be more unsure about whether the Philosophy is often a theme in the tuition—that is, the teaching at the RNA (Q 1-2).

A high percentage perceive a very good understanding of OBL (Q 10). Regarding the perception of connections between RNA's education and practice, approx. 55% of the Cadets perceive it to be a significant correlation between RNA's leadership education and its practice (Q 4). The Cadets often discuss Operative Leadership between them, and they seem to agree with the statement that OBL is often practiced at the RNA (Qs 6 and 11). The responses regarding perceived effects of being a Cadet (Qs 5 and 15) indicate that approx. 50% of the respondents seem to be measured by their Leadership qualities. Approx. 1/3 of the Cadets seem to be somewhat bound or inhibited by existing Leadership praxis.

Variants of the self-report method are numerous and can be organized in a number of ways (Paulhus & Vazire, 2007). The most important limitation of the present study may be that the data are self-reported. Thus, future research should attempt to expand upon this study, for example, by using a follow-up study which investigates what teachers at the RNA perceive. Thus, exploring eventual differences. In that way, maybe obtaining an updated and expanded insight into recent Naval Leadership Education.

Discussion

Similarity and difference are fundamental to Cognition⁶ (Simmons & Estes, 2008). I did suspect to find at least some differences given the time span between my own Cadet period and today's reality. Firstly, the results from the survey strongly

⁶The mental action or process of acquiring knowledge and understanding through thought, experience, and the senses.

indicate that the Cadets seem to have a good knowledge and understanding of what is stated in RNA's Leadership Philosophy, the Basic Pedagogical View, and the Norwegian Joint Operational Doctrine. These normative documents include independent thinking, reflection, and freedom of thought. As Freire puts it, "Liberating education consists in acts of cognition, not transfers of information" (2005, p. 79). These initial results may therefore indicate that the Cadets experience to a certain degree a kind of liberating Leadership Education.

The Cadets perceive a significant correlation between RNA's leadership and its teaching and practice. The latter result can be related to what Freire prefers to call "cultural action for freedom", about which he asserts that its goal must be to "conscientize" the people to awaken their critical consciousness (Eder, 1988). One might therefore claim that the RNA and their Military students have adopted a timelier Leadership Education and praxis aligned with modern management/ Leadership literature. This may signify a turn towards enhanced adaptivity. Which also may encourage the Cadets to have a more constructively critical approach to both CoPs and CoLs in which they are a part of.

The above was not exactly the case in the 1980s when, among many things, these documents did not exist. In there lies a significant difference. We were more instructed or indoctrinated by our Military teachers. We were mainly supposed to take for granted what our teachers taught us without asking too many critical questions. In that sense, we experienced what Freire calls "The Banking Concept". The students are not called upon to know but to memorize the contents narrated by the teacher (Freire, 2005, p. 80). In the Banking Concept of education, knowledge is a gift bestowed by those who consider themselves knowledgeable upon those whom they consider to know nothing (Freire, 2005, p. 72). However, we decided to liberate ourselves without our Military teachers' knowledge and understanding of liberating teaching methods. Much to their surprise at the time. This signified for us a turn towards a more flexible way of the approach to become Military Leaders. The results in the present study however clearly indicates that flexibility and adaptiveness has become much more present in recent Naval Leadership Education in Norway.

What I found somewhat surprising in the survey results was that as much as one third of the Cadets responded that they were bound or inhibited by existing Leadership praxis, and "only" 50% seemed to be measured by their Leadership qualities. I expected a much higher percentage, and I find this somewhat paradoxical. Why? Because RNA's Leadership Education should emphasize measuring the Cadet's abilities to perform as leaders. This is clearly stated in RNA's Leadership Philosophy. Also, in their praxis as Military Leaders, they will be measured by Leadership Qualities every year. This may be related to their seeming to be more unsure about whether the Leadership Philosophy is often a theme in the tuition at the RNA. The paradox also includes that they perceive a significant correlation between RNA's Leadership Education and its practice. This may coincide with the banking concept of education, in which the scope of action allowed to the students extends only as far as receiving, filing, and storing the deposits (Freire, 2005). In this sense, I also find similarities between my own Leadership Education at the RNA and today's Cadet's perception. The above-mentioned paradoxes are therefore interesting for further investigation.

Lastly, in this section, I will draw attention to Paulo Freire's *raison d'être* of libertarian education. He states that education must begin with the solution of the teacher-student contradiction by reconciling the poles of the contradiction so that both are simultaneously teachers and students. The ground is prepared when we consider that much of this thinking is found in the literature mentioned above, even if the results from the survey indicate that this is only partially fulfilled. The RNA seems to be on the right track but still not quite there yet. Therefore, the RNA should pursue the positive track it is on, and further develop both leadership teaching and praxis to fulfil today's needs for leaders who are flexible-minded and adaptive.

Conclusion

Does the investigated Naval Leadership Education then and now differ in any way? The present study mainly investigated the Cadet's subjective perception of their Leadership Education at the RNA. There are differences, but also similarities. In addition, in this paper, I have also reflected upon some personal experiences as a Cadet at the RNA. I have investigated through a relatively short questionnaire some perspectives concerning "modern" or updated Military Leadership Education at the RNA. The purpose of this was to explore certain aspects of education and practice through the eyes of the beholders, the Cadets. Questions regarding Edification (formation or *bildung*, author's remark) and Operative Leadership have been to some extent also explored.

When one experience is made the subject of concrete, critical, and theoretical reflection, one can open clarifying perspectives and sometimes lead to astonishing insights (Lindseth, 2020, p. 100, author's translation). As we shift back and forth among perspectives, we may bring different elements of a situation to salience and highlight different features of the world. We must put our own practical knowledge to the test. As Lindseth (2020) claims, if we want to understand the connections in life, we need inner evidence (p. 96), that is, insight into connections (p. 89). Therefore, my two approaches may complement each other.

I will also point out that this paper's introductory research methodology originates first and foremost from Reflective Practice Research (Lindseth, 2020) and must not be confused with or compared to "evidence-based research" derived from natural sciences, which is conveyed through randomized controlled trials giving quantitative data (e.g., Larivière et al., 2006). Reflective Practice Research arises from the ideas of evidence-based practice (e.g., Kvernbekk, 2015; 2018). My initial approach in this paper lies, therefore, within the field of humanities, its point of departure in the experiences of the researcher - me.

Recommendations

To further develop this area it may be helpful to supplement the initial survey findings with a follow-up study. This may further articulate the conceptual and empirical contributions, and to explicitly connect those contributions to work already published in the present study. A follow-up study should investigate what the teachers at the RNA perceive. Also, the findings regarding the survey questions may seem somewhat superficial. Participants can be interviewed for in-depth analysis of their views. I believe this would broaden both learners and practitioners understanding of each other's subjective perceptions. In addition, a longitudinal study which expands on this initial study, may provide even more precise and complementary answers. In this way, therefore also obtaining a broader insight into recent Naval Leadership Education in Norway. As I see it, Leadership Education and practice is still full of undiscovered intricacies and paradoxes.

Limitations

There are limitations to the present study. Firstly, there are a limited number of research questions which may indicate that not every aspect of Naval Leadership Education is scrutinized. Surveys often also suffers the limitation of forcing respondents into particular response categories, thereby limiting the range of respondents (Simon & Goes, 2013). Also, the respondents were not chosen randomly. Thus the results cannot be generalized to the rest of the student population (Schuster & Powers, 2005). Lastly, another limitation of the present study may be that the data are self-reported. According to Devaux & Sassi (2016), people are often biased when they report on their own experiences. Therefore, any inferences must be made with caution.

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Enhancing Remote Work Competencies in Croatia: Findings from VirtualEdu Project

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The Erasmus+ project “VirtualEdu - Upskilling and certification scheme for virtual educators, managers, workers” aims to create a certification scheme that improves the skills of remote workers and certifies them. In addition, the main objectives of the project are the development of innovative training methods and materials, the establishment of a digital library of training materials and the organization of a Massive Open Online Course (MOOC) to develop the skills of remote workers. This paper presents the results of a study aimed to identify a skills gap among remote workers in Croatia to support the design of the training curriculum for the VirtualEdu MOOC. In a developed questionnaire, respondents assessed the relevance of a set of competences and skills for remote work and for trainings aimed at developing these competences and skills. The questionnaire also aimed to determine perceptions of the usefulness of training to develop these competencies. The results showed that respondents (N=86) perceived the greatest need for the development of digital skills, self-management and organizational skills, specific skills for educators and collaboration skills. The interest of Croatian remote workers in developing remote work skills indicates the need for the development of lifelong learning opportunities such as VirtualEdu training.

Keywords: remote work, remote education, Massive Open Online Course, lifelong learning, skills gap analysis.

Introduction

Academic research highlights the need to train educators, managers and other employees to work effectively remotely in order to prevent future crises. For a successful remote education, management and work, employees need many skills to properly apply remote working practices and information-communication technology (Emperatriz & Yudet, 2022; Hoic-Bozic & Holenko Dlab, 2021; Kiliç, 2022; van Laar, van Deursen, van Dijk, & de Haan, 2019). The recent SARS-CoV-2 pandemic has forced educational institutions and companies to move their activities into the virtual space, leading to ad-hoc distance education and remote work initiatives (Meisner & McKenzie, 2023). However, the lack of established protocols has had a negative impact on student learning and teacher satisfaction, so improvements are needed (Donath et al., 2024). Companies have also switched to remote management and work, but success rates vary. Challenges include insufficient replication of physical interactions in virtual environments and a lack of digital skills among employees (Saniuk et al., 2022; Tursunbayeva, Di Lauro, &

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Antonelli, 2021). As the DESI index shows (*Digital Decade DESI visualisation tool*, 2024), there are inequalities in the adoption of remote working practices and tools between countries in Western, Central and South Eastern Europe.

The Erasmus+ project Upskilling and certification scheme for virtual educators – VirtualEdu, co-funded under Key Activities 2, Strategic Partnerships for Higher Education (KA220-HED), aims to contribute to solve this problem by setting up a certification scheme and then training and certifying teachers, managers and other employees to work remotely. The overarching goal is to support the European Union's digital transformation efforts and improve preparedness to withstand the disruptive effects of pandemics and unforeseen events that impact education, collaboration and professional work in general. While other similar projects focus exclusively on the skills required for efficient and effective distance education, the VirtualEdu project also aims to improve other skills related to remote work, such as remote project management, document management, business processes and productivity improvement. These skills are needed by professionals in business, but also by managers and employees of educational institutions (*VirtualEdu project*, 2024).

The aim of the VirtualEdu project is to create a certification scheme with a clear definition of the required skills, training curriculum, resources and activities to be included in Massive Open Online Course (MOOC), and certification exams in line with the ECQA (European Certification and Qualification Association) rules (European Certification and Qualification Association, 2010). As there is no consensus in the academic literature on the essential skills and competences required for the success, efficiency and improved performance of different professionals engaged in remote work, the project consortium conducted a questionnaire-based study. In the study respondents assessed the relevance of a set of competences and skills for remote work and for training to develop these competences and skills. The questionnaire also aimed to determine perceptions of the usefulness of training to develop these competencies.

The aim of this article is to present the results of conducted study and identify the main challenges that Croatian remote educators, managers and employees face in their professional work and to show which skills they consider most important. The research findings informed the design of the VirtualEdu training curriculum and learning resources, but also contribute to the knowledge of the skills gap for the professional roles of distance workers in Croatia, which is necessary for the improvement of remote workers' competences.

The rest of the article is organized as follows. Section 2 gives an overview of related work regarding enhancing remote work competencies through training programs. Section 3 describes the methodology including research questions, instrument, procedure, and participants. The results are presented in section 4. Section 5 contains a discussion and section 6 contains conclusions.

Related Work

Various studies have demonstrated the effectiveness of training programs

aimed at enhancing the professional competencies of educators. For example, Kmeta and Bjekić (2015) have highlighted the success of face-to-face and online training which focused on empowering vocational teachers to integrate modern technologies into remote education. Similarly, Sáiz-Manzanares et al. (2022) reported positive feedback from participants in a blended learning training course designed to support teachers in the use of virtual learning environments. Evans et al. (2019) also found that professional development courses organized according to the blended learning model effectively improved teachers' use of Blackboard LMS and resulted in increased teacher activity and adoption of various online teaching tools.

In the context of digital transformation in general, not just in the field of education, the focus is on promoting digital competencies. Digital competencies encompass the awareness, attitude and ability to use digital tools and resources effectively for different purposes, as defined by Martin & Grudziecki (2006). Torres-Coronas & Vidal-Blasco (2011) describe digital competence as the ability to use information technologies and social software for analytical, productive and creative purposes. Existing frameworks that can guide the selection of those that need to be included in the training with the aim of development of remote work and education skills are DigComp (Vuorikari, Kluzer, & Punie, 2022) and DigCompEdu (Redecker, 2017). These European competence frameworks outline the digital competences required for citizens and educators.

DigComp encompasses five key areas of digital competencies: information and data literacy, digital and content creation, communication and collaboration skills, online safety, and problem-solving skills. These areas constitute the first dimension of the reference framework. In the current version, DigComp 2.2, there is 21 competence grouped in five above mentioned key areas. Second dimension includes competence descriptors and titles for each area. To determine the progression of individuals in the acquisition of each competence, a third dimension of the framework is defined - proficiency levels of each competency that are based on four overall levels: foundation, intermediate, advanced, and highly specialized. Remaining dimensions include examples of knowledge, skills, and attitudes specific to each competency (fourth dimension), and use cases (fifth dimension) (Vuorikari, Kluzer, & Punie, 2022).

DigComp 2.2 provides a detailed description of different competency areas and can serve as reference framework to develop, assess, and recognize digital competencies. However, in case of educators, DigCompEdu framework was developed to outline the essential digital competencies that educators need to effectively integrate digital technologies into teaching and learning processes (Redecker, 2017). DigCompEdu identifies six areas of digital competence for educators from all educational levels. Framework groups competencies based on three different aspects: educators' professional competencies (professional engagement), educators' pedagogic competencies (digital resources, teaching and learning, assessment, and empowering learners) and learners' competencies (facilitating learners' digital competence).

Although these two frameworks tend to seize the potential of digital technologies for enhancing and innovating remote education and work, they do not encompass

all the competencies required for remote working.

A systematic literature review conducted by Kolm et al. (2022) concluded that there is no study that covers all the competency needs for remote education and work. In addition to ICT skills, the study highlights five other areas of competence (intercultural and cultural competencies, communication skills, self-management and organizational skills, collaboration skills and domain-specific skills) that need to be considered when selecting topics for training in the field of remote work (*VirtualEdu project*, 2024). Tusyanah et al. (2023) and Borge et al. (2022) also emphasize the significance of multicultural collaborative skills in enhancing interpersonal communication, developing shared ideas, and building understanding and collective knowledge. Successful collaboration entails interpersonal trust and open-mindedness towards colleagues' viewpoints (Kulić & Janković, 2022). Factors that contribute to successful remote work include self-management and organizational skills, especially 'time management' (Manasia, Ianos, & Chicioreanu, 2019). Self-management allows for greater availability of resources, proactively initiating social interactions and improving task significance during remote work (Costantini & Weintraub, 2022). Karim, Safran, Shuib, and Azmi (2021) argue that it is important to integrate the 6Cs (critical thinking, collaboration, communication, creativity, citizenship or cultural awareness, and connectivity) into the training programs for remote workers.

Related research has shown that there are numerous professional competencies required for remote work in addition to domain-specific skills. In order to select topics for remote work training, the *VirtualEdu* project consortium decided to conduct additional research and investigate the skills gap analysis of the target group of participants using questionnaire.

Methodology

The study described in this article aims to identify the skills that remote workers in Croatia find the most important and their attitudes towards the usefulness of training to develop these skills. The specific research questions were:

- RQ1) What do Croatian remote educators, managers and employees consider as main challenges of remote work?
- RQ2) What skills do Croatian remote educators, managers and employees consider most important for remote work?
- RQ3) What skills do Croatian remote educators, managers and employees consider relevant for a training dedicated to development of remote work skills?
- RQ4) What are perceptions of Croatian remote educators, managers and employees of the usefulness of training for development and certification of remote work skills?

The research methodology and the instrument used was defined by *VirtualEdu* project consortium (*VirtualEdu project*, 2024).

Instrument and Procedure

A quantitative research methodology was used to answer the research questions. For the purpose of the study, the project consortium developed a questionnaire with 21 questions.

The first part of the questionnaire was used to determine the profile of the participant and included questions about the organization, the industry, the experience with remote work and the professional status of the participant.

The second part of the questionnaire was designed to assess the need for remote working skills and included questions on the participant's perceptions of:

- Challenges faced by the respondent when working remotely
- Relevance of certain skills in the context of remote work
- Relevance of certain skills for a training dedicated to development of remote work skills
- Usefulness of a training for development and certification of remote work skills (i.e., with reference to the certification scheme of *VirtualEdu* project).

Third part of the questionnaire was used to determine demographic information (age, gender) of the participant.

The skills needs assessment in the second part of the questionnaire consisted of assessing the relevance of different categories of skills using a 5-point Likert scale, with 1 being “not relevant” and 5 being “essential/mandatory”. Categories of skills were in line with the competency framework for remote work, remote management, and remote education (*VirtualEdu project*, 2024) defined by the project consortium, which includes the following dimensions:

- Digital competencies
- Collaboration competencies
- Self-management and organization skills
- Interpersonal and intercultural and communication skills
- Specific skills of remote educators.

The development of competency framework was based on *DigComp* and *DigCompEdu* frameworks and other relevant academic resources.

The designed questionnaire was distributed via Google Forms application from April to June 2023 for all partner countries. The responses of the Croatian participants were then filtered and statistically analyzed.

Additionally, a competency matrix was formulated to identify the competencies that should be focused on, categorized as either challenging, missing, or highly essential for each of the three roles (*VirtualEdu project*, 2024). To underscore the *relevance* of each assessed competency, a weighted average was computed using the following formula:

$$R_{Ci} = \frac{[(N_{Nr}*1)+(N_{Sr}*2)+(N_R*3)+(N_{Vr}*4)+(N_E*5)]}{5} \quad (1)$$

where:

- R_{Ci} – Relevance of competency i
- N_{Nr} – number of responses rating competency i as “Not relevant”
- N_{Sr} – number of responses rating competency i as “Somewhat relevant”
- N_R – number of responses rating competency i as “Relevant”
- N_{Vr} – number of responses rating competency i as “Very relevant”
- N_E – number of responses rating competency i as “Essential/mandatory”.

Further, a second dimension, *score*, was calculated in a two-step process:

1. The difference between the number of responses rating competency i as “Very relevant” (N_{VrCi}) and the number of responses rating competency i as “Essential/ mandatory” (N_{Ec_i}) was calculated:

$$IS_{Ci} = N_{VrCi} - N_{Ec_i}$$

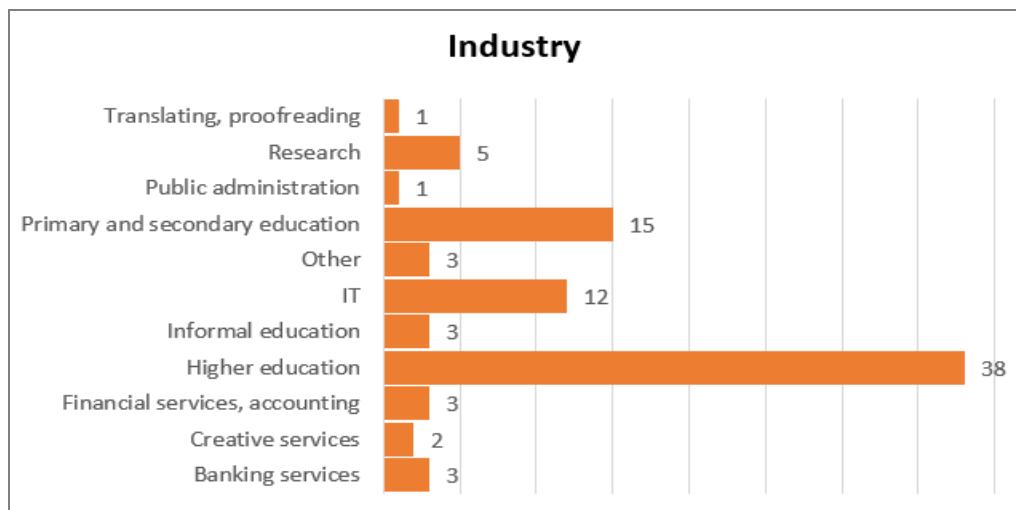
2. A score ranging from 1 to 4 was assigned based on the following criteria:

- If $IS_{Ci} < -10$, then score = 1
- If $-10 \leq IS_{Ci} < 0$, then score = 2
- If $0 \leq IS_{Ci} < 10$, then score = 3
- If $IS_{Ci} \geq 10$, then score = 4.

Participants

A total of 86 responses were collected using questionnaire from respondents in Croatia. Respondents were recruited through the convenience sampling technique. As can be seen in Figure 1, 38 (44.19%) of the respondents work in higher education, 15 (17.44%) in primary or secondary education and 12 respondents (13.95%) stated that they work in the field of information technology (IT). About half of the respondents, 51.2%, stated that they work in an organization with more than 100 employees, 10.5% of the respondents stated that they work in an organization with 50 to 100 employees, 33.7% in an organization with 10 to 50 employees, while 4.7% of the respondents work for an organization with less than 10 employees.

Figure 1. Distribution of Respondents by Industry



As can be seen from Table 1, 55 of the respondents (64%) were female and 30 (35%) male. The age distribution of respondents is balanced and ensures a comprehensive analysis of the skills gap that includes the different generations represented in the labor market: Baby Boomers, Generation X and Millennials. The highest number of respondents is in the 35-45 age group (38 or 44.18%). When asked about remote work status, 12 respondents (13.95%) indicated that they are currently involved in remote work full-time, while 26 respondents (30.23%) are involved in remote work some of the time. In addition, 43 (50%) of respondents have already experienced remote work but are not currently working remotely. Only 5 respondents (5.81%) indicated that they have never worked remotely (Table 1).

Table 1. Distribution of Respondents by Gender, Age, Remote Work Status and Size of Organization

Indicator	Category	Number of respondents
Gender	Female	55
	Male	30
	Other/Not specified	1
Age	<25 years	1
	25-35 years	20
	35-45 years	38
	>45 years	27
Remote work status	Currently working remotely full time	12
	Partially work remotely	26
	Used to work remotely, but currently are not	43
	Never have worked remotely	5

Respondents who were currently working remotely full-time or part-time were asked how long they had experienced remote work and/or remote education. The results show that remote work and remote education have increased during the SARS-CoV-2 pandemic. As shown in Figure 2, 52% of respondents who work remotely have between one and three years of experience with this type of work, 26% of respondents have more than three years of experience working remotely, while 21.9% have one year of experience working remotely. Only 2% of respondents have less than 6 months' experience of remote work. These results suggest that the vast majority of study participants have sufficient experience of remote work.

The analysis of the answers regarding the current position/role of the respondents in their organizations (Figure 3) showed that all roles are sufficiently represented among the participants: 45 (52.32%) respondents are in the role of remote educator, 31 (36.05%) respondents are in the role of remote employee, and 10 (11.63%) respondents are in the role of remote manager.

Figure 2. Distribution of Respondents by Experience in Remote Work

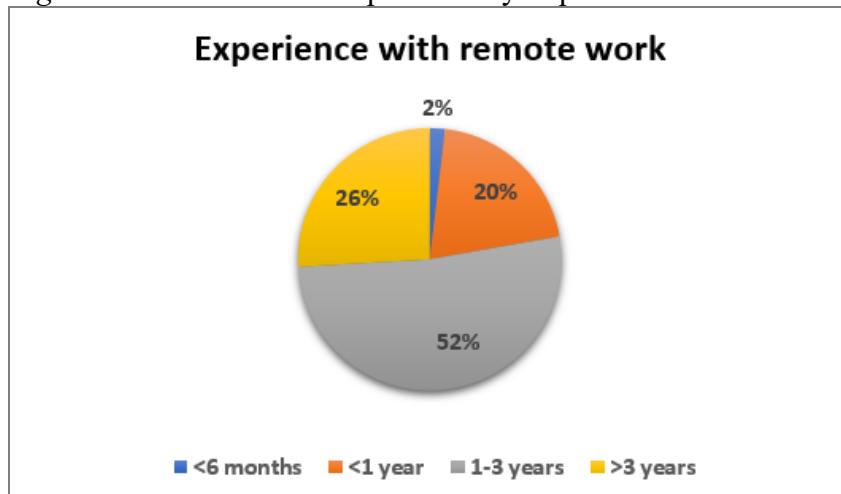
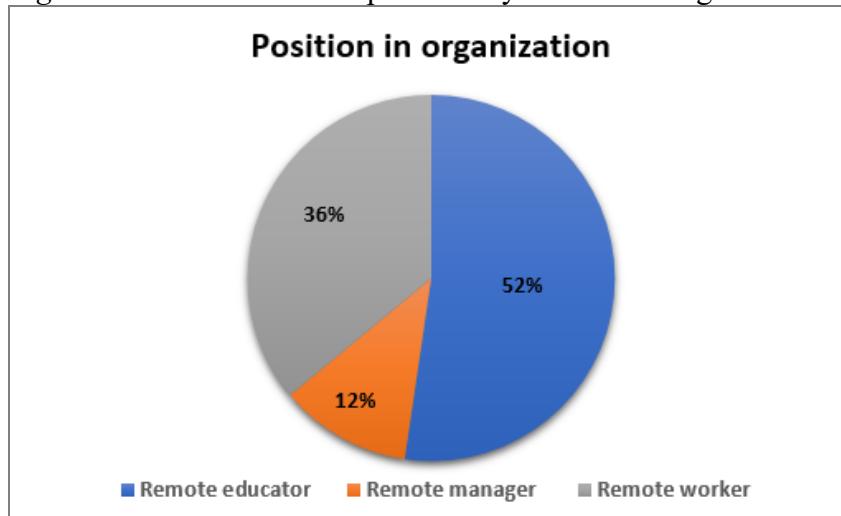


Figure 3. Distribution of Respondents by Position in Organization

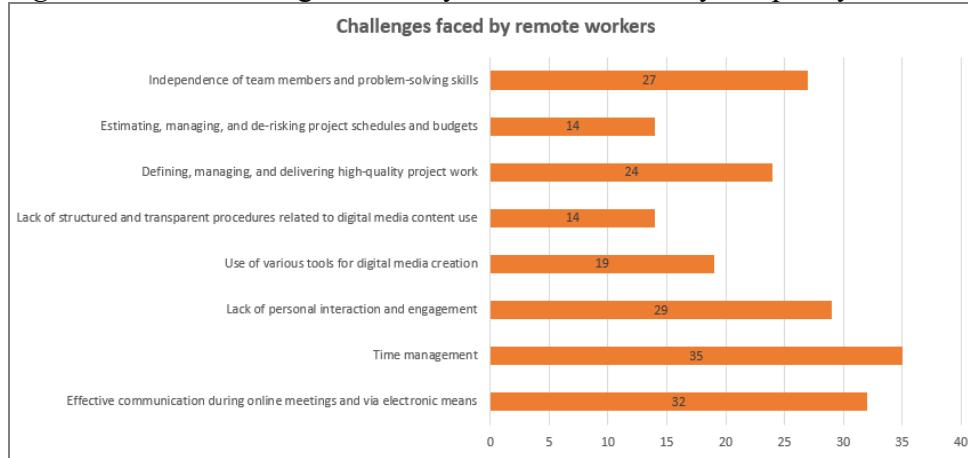


Results

Main Challenges Faced by Remote Workers

Among the main challenges (Figure 4) faced by educators, workers and managers working remotely in Croatia are *time management, effective communication during online meetings and via electronic means, and lack of personal interaction and engagement*.

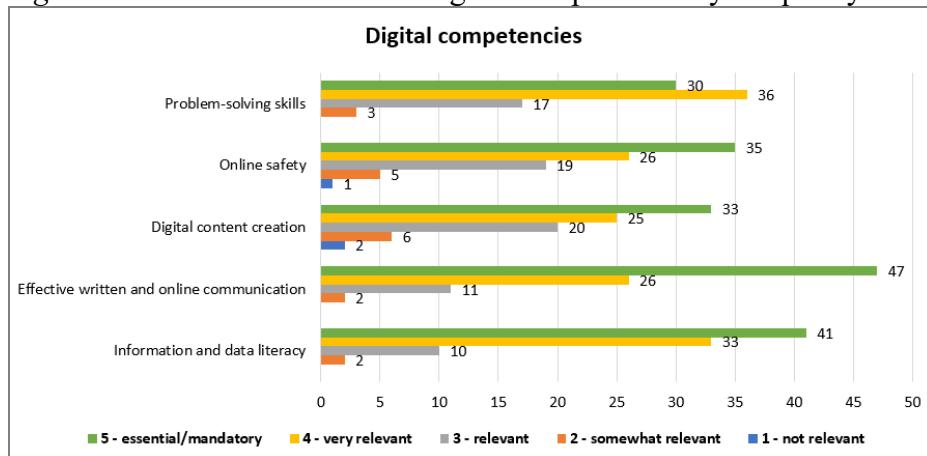
Figure 4. Main Challenges Faced by Remote Workers by Frequency



Relevance of Remote Working Skills

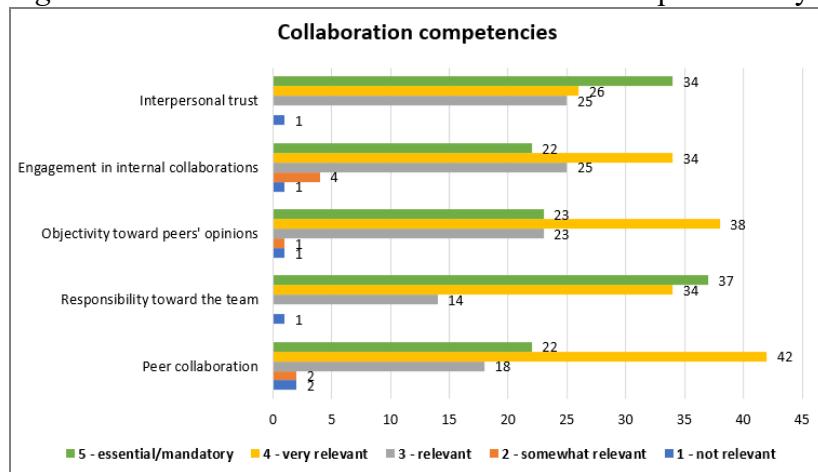
As can be seen in Figure 5, in terms of digital skills, effective written and online communication was most often assessed as essential/mandatory (47 respondents), information and data literacy (41 respondents), online safety (35 respondents) and digital content creation (33 respondents). Problem-solving skills were mostly rated as very important (36 respondents), while 30 respondents considered them essential.

Figure 5. Assessed Relevance of Digital Competencies by Frequency



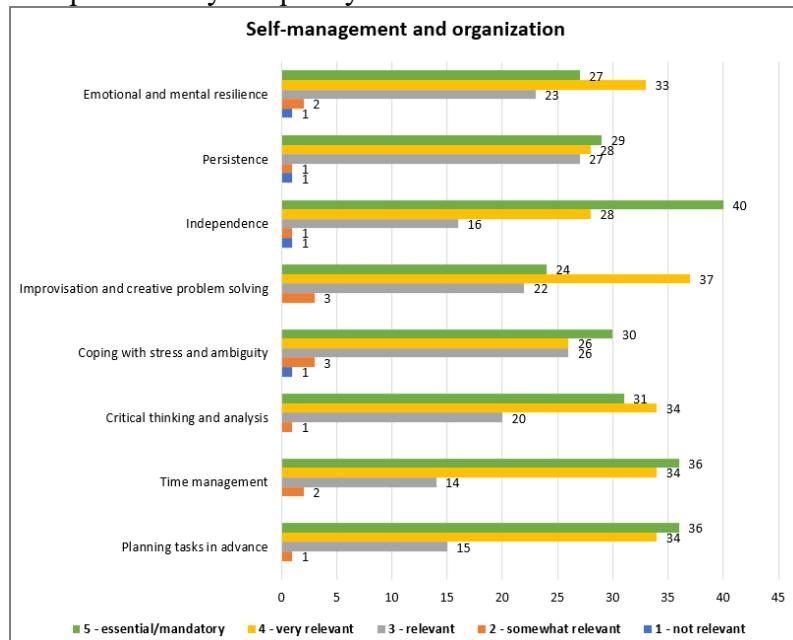
As depicted in Figure 6, within the collaboration competencies category, *responsibility towards the team* (37 respondents) and *interpersonal trust* (34 respondents) emerged as the most commonly considered essential/mandatory skills, whereas *peer collaboration* (42 respondents) and *objectivity towards peers' opinions* (38 respondents) were predominantly identified as highly relevant skills.

Figure 6. Assessed Relevance of Collaboration Competencies by Frequency



In terms of self-management and organizational skills, all competencies were mostly assessed as either essential/mandatory or very important (Figure 7). Within this category, *independence* received the highest number of respondents affirming its essential/mandatory status (40 respondents), followed by *time management* (36 respondents) and *planning tasks in advance* (36 respondents).

Figure 7. Assessed Relevance of Self-management and Organization Competencies by Frequency



Interpersonal and intercultural and communication skills were primarily assessed as highly relevant (Figure 8). Particularly noteworthy were *remote communication strategies* (36 respondents), *avoiding digital alienation by engagement with other remote workers* (29 respondents), and *managing social*

isolation (29 respondents), which were frequently assessed as very relevant. Notably, *managing social isolation* received the highest number of essential/mandatory ratings (26 respondents).

Figure 9 shows the results of the last category of skills proposed for assessment, i.e. *specific skills for remote educators* required to adequately address the specificities of remote education. *Planning and implementation of digital devices and digital content in the teaching process* (39 respondents), *using digital technologies and services to enhance interaction with learners* (38 respondents) and *using digital technologies to provide targeted and timely feedback to learners* (36 respondents) were most frequently rated as essential/mandatory.

Figure 8. Assessed Relevance of Interpersonal and Intercultural and Communication Skills by Frequency

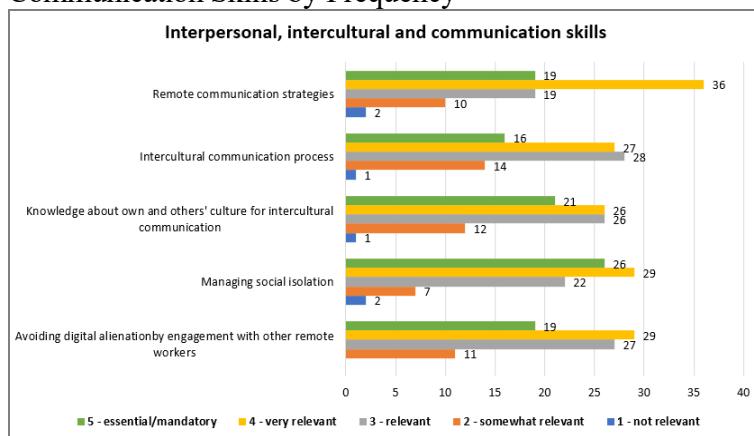


Figure 9. Assessed Relevance of Specific Skills for Remote Educators by Frequency

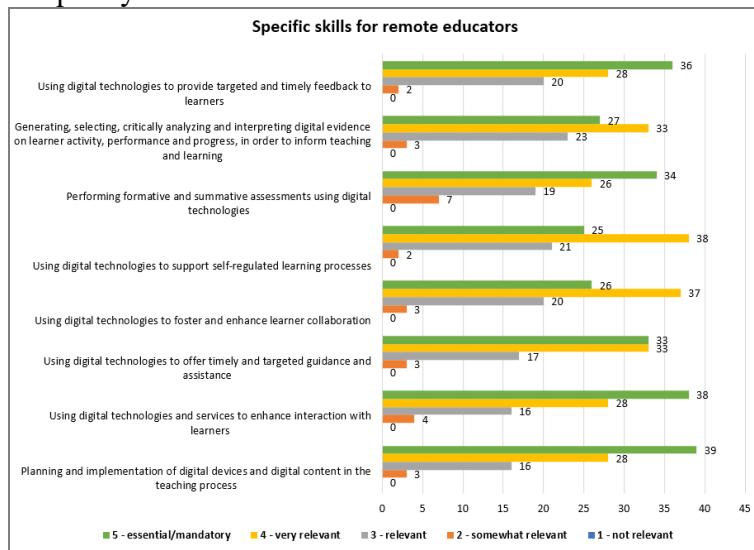


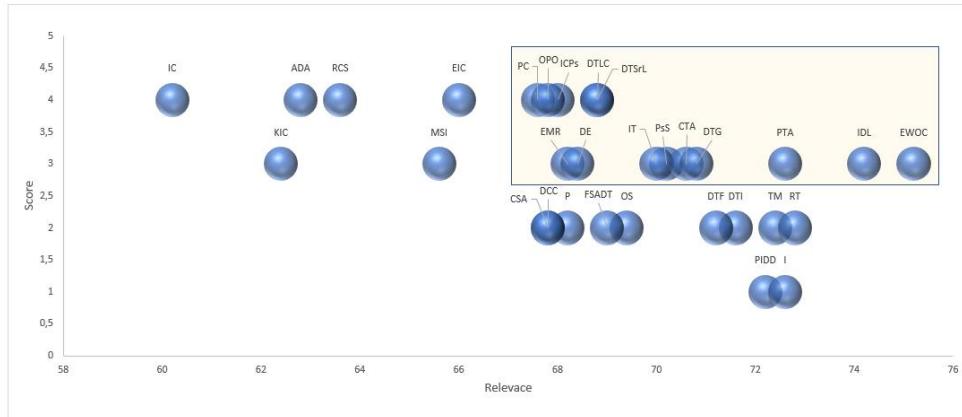
Table 2 presents the results of the two dimensions, relevance and score, calculated for the competency matrix, sorted from largest to smallest.

Table 2. Perceived Usefulness of a Training for Development and Certification of Remote Work Skills

Competency	Abbreviation	Relevance	Score
Effective written and online communication	EWOC	75.2	3
Information and data literacy	IDL	74.2	3
Responsibility toward the team	RT	72.8	1
Planning tasks in advance	PTA	72.6	2
Independence	I	72.6	1
Time management	TM	72.4	1
Planning and implementation of digital devices and digital content in the teaching process	PIDD	72.2	1
Using digital technologies and services to enhance interaction with learners	DTI	71.6	1
Using digital technologies to provide targeted and timely feedback to learners	DTF	71.2	1
Using digital technologies to offer timely and targeted guidance and assistance	DTG	70.8	2
Critical thinking and analysis	CTA	70.6	2
Problem-solving skills	PsS	70.2	3
Interpersonal trust	IT	70	2
Online safety	OS	69.4	1
Performing formative and summative assessments using digital technologies	FSADT	69	1
Using digital technologies to foster and enhance learner collaboration	DTLC	68.8	4
Using digital technologies to support self-regulated learning processes	DTSrL	68.8	4
Generating, selecting, critically analyzing and interpreting digital evidence on learner activity, performance and progress, in order to inform teaching and learning	DE	68.4	3
Emotional and mental resilience	EMR	68.2	3
Persistence	P	68.2	1
Improvisation and creative problem solving	ICPs	68	4
Objectivity toward peers' opinions	OPO	67.8	4
Coping with stress and ambiguity	CSA	67.8	1
Digital content creation	DCC	67.8	1
Peer collaboration	PC	67.6	4
Engagement in internal collaborations	EIC	66	4
Managing social isolation	MSI	65.6	2
Remote communication strategies	RCS	63.6	4
Avoiding digital alienation by engagement with other remote workers	ADA	62.8	4
Knowledge about own and others' culture for intercultural communication	KIC	62.4	3
Intercultural communication process	IC	60.2	4

Figure 10 shows the visual representation of the skills gap using the data from Table 2. Competencies that should be in the focus are framed by a yellow rectangle in the figure and shown in bold in Table 2.

Figure 10. Visual Representation of the Skill Gap Based on Competency Matrix



Relevance of the Training for Development and Certification of Remote Work Skills

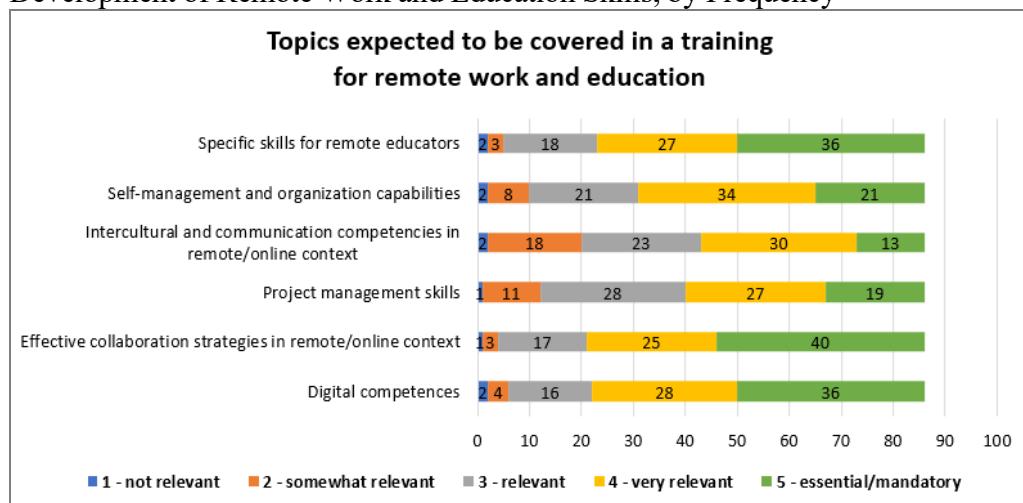
To examine relevance of the training for development and certification of remote work skills, participants were asked to express their attitudes on a scale of 1 (completely disagree) to 5 (completely agree). According to the results (Table 3), majority of participants (75%) agree and strongly agree that their professional competencies can be improved while 56% of participants are actively seeking to acquire additional skills and to extend their professional competencies. In addition, 64% of participants reported they would like to improve their capacity to face the new challenges for enhanced performance in remote work.

Table 3. Perceived Usefulness of a Training for Development and Certification of Remote Work Skills

Statement	AVG	1	2	3	4	5
I consider that my professional competencies can be improved.	4.10	2%	5%	17%	52%	23%
I am actively seeking to acquire additional skills and to extend my professional competencies.	3.96	6%	10%	28%	30%	26%
I would like to improve my operating capacity to face the new challenges for enhanced performance in remote work.	4.07	7%	7%	22%	36%	28%

When asked about the topics they would anticipate being addressed in a training session aimed at enhancing remote work skills, respondents conveyed significant interest in *effective collaboration strategies in remote/online context* (40 respondents), *digital competencies* (36 respondents), and *specific skills for remote educators* (36 respondents). However, all proposed skill categories were consistently rated as either essential or very relevant (Figure 11).

Figure 11. Preference for Specific Topics to be Considered for a Training on Development of Remote Work and Education Skills, by Frequency



Discussion

A total of 86 respondents from Croatia participated in the survey-based study, which was conducted jointly by all partners of the Virtual Edu consortium. The main objective of the study was to identify the skills needed to complement the current knowledge and competencies of remote educators, remote workers and remote managers.

Regarding the challenges faced by remote workers, educators, and managers in Croatia (RQ1), the results have shown that time management, effective communication during online interactions and the absence of personal interaction are the biggest hurdles, so addressing these challenges is essential in training to develop skills for remote work in Croatia.

Among most important skills for remote work, Croatian remote educators, managers and employees consider a whole range of skills (RQ2). Among digital skills, *effective written and online communication* received the highest number of respondents affirming its essential/mandatory status. Regarding skills related to self-management and organization, *independence* was most often assessed as essential. Within the collaboration competencies category, *responsibility towards the team* and *interpersonal trust* were most frequently rated as essential while *planning and implementation of digital devices and digital content in the teaching process*, *using digital technologies and services to enhance interaction with learners* (38 respondents) and *using digital technologies to provide targeted and timely feedback to learners* (36 respondents) emerged as the most commonly considered essential among specific skills for remote educators. Participants assessed skills for interpersonal and intercultural and communication primarily as highly relevant. These results indicate that the training for enhancing remote work competencies should cover a wide range of skills.

Regarding the RQ3, the competency matrix revealed the numerous training

needs for Croatian educators, managers and employees. A significance of these results is the validation of the proposed topics for the training curriculum through the findings of the questionnaire. Main finding is that training needs for the Croatian beneficiaries are in line with the categories of skills initially considered to be covered by the VirtualEdu training and certification program.

Respondents acknowledge the relevance of training for the development and certification of remote work skills (RQ4). They expressed the attitude that their professional competencies can be improved as well as a desire to do so in order to meet the demands of the remote work market. In addition, just over fifty percent of them are actively seeking opportunities to achieve this goal.

It is important to acknowledge a limitation in the study related to the sample size (N=86). While this sample provides valuable insights, it may not fully represent the diverse experiences within the broader population of remote workers, educators, and managers in Croatia. Future studies with larger and more diverse samples would help confirm and expand on these results.

Conclusions

The results of the study presented in this article provide insights into the skills gap among remote workers in Croatia, which is essential for enhancing their competencies. The results also informed the development of the VirtualEdu training curriculum by revealing actual needs of target group of participants as well as the perceived opportunities and usefulness of the VirtualEdu training and certification program.

The expected outcomes of training that will be organized through MOOC course promise significant benefits for educators, managers, students and employees in Croatia working remotely. Through training and certification program, educators and other professionals in the education sector will improve their remote working skills, which will have a positive impact on both educational institutions and private organizations. The results of the project are expected to extend beyond the education sector and impact the broader labor market as well as enrich corporate practices. Managers or employees who obtain certification in remote working skills will gain a competitive advantage. In addition to professionals, students from Croatian universities will also have opportunity to develop practical skills needed for employment.

Acknowledgments

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Reactive Behaviour when Operating a Proactive Method during Crisis: Learning through Reactivity to Proactivity

By Knut Mellingsæter Sørensen & Ole Boe[†]*

This paper examines the crisis management response of the Norwegian Correctional Service (NCS) at the national directorate level to the Covid-19 pandemic. We conducted a document analysis based on the internal report produced by the NCS to assess their performance during the initial phase of the pandemic. The aim was to extract key learnings to enhance future crisis handling. Our research focused on two main questions: 1. How did the National Crisis Management Unit address the pandemic at the directorate level? 2. What lessons could the NCS draw from this experience to improve its responses to future crises? The analysis suggests that the NCS struggled to effectively mobilize and execute its emergency plans amid the crisis. Additionally, the report highlighted a lack of clear role definitions within the NCS, which blurred the lines between routine functions and crisis-related duties. Our findings indicate that the NCS predominantly displayed reactive tendencies rather than employing a proactive staff methodology, which is critical during crises. These insights offer valuable lessons for other organizations in understanding the dynamics of learning from crises, specifically the factors influencing when, why, and how an organization adapts and improves its crisis management capabilities.

Keywords: COVID-19, crisis management, bureaucracy, reactive behaviour, learning

Introduction

In our examination, we will shed light on the strategic maneuvers of the Norwegian Correctional Service (NCS) at the national directorate echelon during the COVID-19 pandemic. The establishment of the “National Crisis Management Unit” by the directorate was a pivotal move aimed at ensuring the NCS's adept management of the pandemic. This unit was responsible for orchestrating the efforts across the regional levels of the correctional service, all under the directorate's umbrella, to effectively meet the service requirements and directives of prisons and community centers at the end of the operational chain. This hierarchical, decision-focused, and efficiently operating crisis unit was integral to maintaining order and managing the pandemic within the NCS.

In 2019, the Directorate for Civil Protection and Emergency Planning highlighted pandemics and medical assistance as the foremost challenges in societal risk assessments (Directorate for Civil Protection and Emergency Planning (DSB, 2019). This revelation prompts us to question the preparedness of the directorate to face a recognized and eminent threat.

Rewinding to the late stages of 2019, the Coronavirus Disease (COVID-19) surfaced in Wuhan, China, in December, leading to devastating losses of life and

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imposing unparalleled challenges on global health systems and work environments (Brooks et al., 2020; Fiorillo & Gorwood, 2020; Lima et al., 2020). Norway documented its initial case of the virus in February 2020 (Kolberg, 2020). Subsequently, the World Health Organization (WHO) proclaimed the outbreak a pandemic on March 11, 2020 (World Health Organization, 2020). Following suit, on March 12, 2020, Norway enacted the most rigorous countermeasures in its history during peacetime (Statsministerens kontor, 2021). The pandemic and its countermeasures wielded significant impacts across all sectors of Norwegian society. It was incumbent on these sectors to conduct critical evaluations of their crisis management responses, a process crucial for collective learning (Statsministerens kontor, 2021). In the case of the NCS, their role was to:

“Prevent and manage contagion by providing strategic guidance as the situation develops. Maintain calm in the business, among employees, inmates and the population. Motivate and support employees in demanding situations. Ensures security and trust in the organisation. Inform and ensure a common understanding of the situation and coordination between the regions, the University College of the Norwegian Correctional Service, directorates with an interface to the correctional service and Department of Justice. Provide guidance and coordinate the regions' responses and measures to ensure an equal approach. Create professional advice and decision-making basis for Department of Justice.” (Kriminalomsorgen, 2020) (author's translation).

Research Questions

Thus, our two research questions were: 1. How did the National Crisis Management Unit address the pandemic at the directorate level? 2. What lessons could the NCS draw from this experience to improve its responses to future crises?

Paper Outline

Our study was structured to systematically answer our two research questions and is organized as follows: Initially, we provide an overview of the relevant context and the structure of the NCS. Subsequently, we elaborate on the concepts pertinent to crisis management and the proactive staff methodology employed by the NCS staff. We continue by offering a brief account of the COVID-19 pandemic's progression in Norway, illuminating its impact on the NCS. We then outline our research method, which involves an analysis of the NCS's internal reports to assess how the directorate managed the crisis.

Following the methodology, we present findings from the internal audit of the NCS, examining how the organization responded to the crisis. The discussion then shifts to exploring how reactive measures can paradoxically emerge from a strategy intended to be proactive, using the NCS's response as a case study. We reveal that although the NCS intended to implement proactive strategies, they resorted to reactive tactics in practice.

We conclude by highlighting the dichotomy between intended proactive approaches and actual reactive behaviors within the NCS during the crisis. The final remarks consider the broader implications this may have for other organizations in understanding the mechanisms and timing of learning from crises.

Context of the Norwegian Correctional Service

The organizational map in the NCS is divided into three levels (Kriminalomsorgen, 2024). The central level of the organization is the Ministry of Justice and Public Security Department of Correctional Services with the Directorate of the NCS that is more operational. Under the central level we find five regional offices that have the managerial responsibility for 33 prisons and 15 probation offices (Kriminalomsorgen, 2024). In this study, we focus on the central level work, delivered to regional levels and local levels with 33 prisons spread across Norway (Kriminalomsorgen, 2024).

Crisis Management and Proactive Staff Methodology in the NCS

In this paper, we delve into various key terms and ideas critical to comprehending the response of the NCS to the pandemic and their management strategies during this crisis. We will delineate these pertinent concepts to enrich our readers' understanding of the subject matter. Central to our exposition is the concept of proactive staff methodology, as this study focuses on analyzing the effectiveness of the NCS's implementation of this approach during the pandemic.

First, Rosenthal et al. (1989, p. 10) defines a 'crisis' as "[...] a situation in which there is a perceived threat against the core values or life-sustaining functions of a social system that requires urgent remedial action in uncertain circumstances". According to crisis researchers they have recognized and described a difference between two theoretical ideal types in their study of crisis, the "fast-burning" and "slow-burning" crises ('t Hart & Boin, 2001). To deal with crisis it is necessary for an organization to have a management that can deal with the crisis. Crisis management is defined as "avert crisis situations when possible and how to minimize the damage caused when crisis is unavoidable" (Pearson & Clair, 1998, p. 60).

The approach an organization takes to confront a crisis is contingent on the nature of the crisis and the organization's capacity to manage the given situation. A prison operates with a bureaucratic framework that relies on a substantial level of task specialization and is highly hierarchical. It maintains clear lines of responsibility focused on coordination and control, in compliance with the governing laws, rules, and regulations that establish its authority (Fivesdal, 2000; Mintzberg, 1983; Sørensen, 2017; Sørensen & Kruke, 2022). Prisons are stable and accountable organizations that work slowly to maintain bureaucratic ideals about trustworthiness to the public. This slow-working capacity is a problem when a crisis occurs, shown in Sørensen (2023). In crisis there is a need for a faster working organization to secure the values that are under threat.

Lunde (2014) has detailed the proactive measures an organization can take to safeguard its core values during a crisis.

Proactive staff methodology is an approach designed to enhance decision-making and interaction in crisis and emergency management by focusing on potential outcomes. This method uses an analytical perspective to address crises, ensuring that emergency response teams assess, decide, and act appropriately in any given situation. The emergency management team evaluates the possible consequences of a critical situation and, using the available information during planning, devises a tailored plan that addresses these identified risks (Lunde, 2019).

The proactive staff methodology is based on six elements (Lunde, 2014). The *first* is *immediate actions* that are implemented as soon as a need for action is identified. The *second* is the *initial meeting* where all the facts about the emergency incident are gathered and the potential consequences are defined so that a situation-specific plan can be drawn up. The *third* is *focus*, where it is prioritized which parts of the situation-specific plan should be prioritized for implementation. The *fourth* phase is *actions* based on the priorities made before the *fifth* phase, *situation description*, provides a visual and written description of the situation. The *sixth* and final phase is *status meetings*, which are held regularly by the emergency management team to share information and establish situational awareness, coordinate, plan and prioritize further handling (Lunde, 2014).

In the NCS, it is the prisons in particular that experience the most serious undesirable incidents such as violence in connection with escapes, cell fires, serious violence and murder (Sørensen, 2023). It is the prisons that are responsible for resolving such incidents on their own, and the regional level and possibly the directorate level will only be informed and have certain support functions in connection with the undesirable incidents that occur. Some prisons have good experience of setting up staff to deal with the undesirable incident in the best possible way. According to Sørensen (2017) and Sørensen and Kruke (2022), the proactive staff methodology has also been used in the imprisonment of the terrorist Anders Behring Breivik at Ila prison, who killed 77 people in the attack on the government quarter in Oslo and on Utøya.

The proactive staff methodology is a decision-making forum that works solely on the emergency situation (Lunde, 2014). It is organized alongside the ordinary line management at a prison, but actors who are key to solving the emergency situation are often in key positions from the management and are thus involved in both the staff and the ordinary line management. The staff has a chief of staff who leads the work and has various functions that are filled by different people from the organization (Lunde, 2014). In the NCS these roles are called F-roles, which include F1 Personnel, F2 Intelligence, F3 Operations, F4 Logistics and F5 Information. The overall responsibilities of these functional managers are to gather and process information, participate in status meetings, contribute to prioritization, translate decisions and plans into actions, and finally control and conclude the implemented actions in their respective areas of responsibility (Lunde, 2014).

The NCS's emergency preparedness plans include various scenarios, with pandemics listed among potential crises. Notably, the Norwegian Directorate for Civil Protection and Emergency Planning had also highlighted pandemics as likely threats in 2019 (DSB, 2019). This raises questions about the readiness of Norway and the NCS for such widespread health emergencies.

The COVID-19 Pandemic in Norway

The COVID-19 pandemic, which began as an outbreak of a novel infectious disease in China around the New Year transition from 2019 to 2020, escalated into a global crisis. The World Health Organization (WHO) officially declared it a pandemic in March 2020. By late 2022, the death toll of confirmed cases had reached approximately 6.7 million worldwide (Tjernshaugen et al., 2024).

Norway reported its first COVID-19 case on February 26, 2020, with its first death recorded on March 12. On the same day, the Norwegian government, under Prime Minister Erna Solberg, enacted stringent measures to curb the virus's spread, described as the most drastic in Norwegian peacetime history (Røed-Johansen & Torgersen, 2020). These initial efforts proved effective, as infection rates dropped significantly by spring, allowing for relaxation of restrictions over the summer. However, a second wave hit in the fall of 2020, prompting a reinstatement of preventative measures (Myrstad et al., 2021).

The vaccination campaign commenced on December 27, 2020, but a third wave surged in spring 2021, fueled by new virus variants. This wave led to record infection numbers and necessitated further temporary shutdowns and strict measures (Tjernshaugen et al., 2024).

By autumn 2021, with over 70% of the Norwegian population fully vaccinated, a fourth wave occurred, albeit with milder cases attributed to the Omicron variant compared to the earlier Delta strain. Consequently, the Norwegian government lifted most infection control measures on February 12, 2022 (Statsministerens kontor, 2022).

Despite maintaining one of the lowest COVID-19 mortality rates in Europe, Norway experienced significant excess mortality in 2022, with around 5,000 deaths, predominantly due to COVID-19, after surpassing 1,000 deaths by the end of 2021. By February 2022, Norway had recorded one million infections (Tjernshaugen et al., 2024).

Method

Document analysis is particularly useful as a method for qualitative case studies (Stake, 1995; Yin, 1994). As we are studying the internal audit report on the NCS's evaluation of the COVID-19 situation in the period of March to June 2020, we decided that conducting a document analysis of this report would be a purposeful avenue in order to shed light on our two research questions.

Document analysis is also a systematic procedure used in evaluating or reviewing documents. The documents can be either printed or electronic material (Bowen, 2009). Document analysis as a scientific method requires that data must be investigated and interpreted. This in order to elicit meaning, gain understanding, and develop empirical knowledge (Corbin & Strauss, 2008; Rapley, 2007).

Procedure and Material

Our document analysis commenced with an examination of the internal audit report on the NCS (Kriminalomsorgen, 2020). This initial step provided insights into

the report's methodological diversity, encompassing interviews, document reviews, and questionnaires. It was established that the report encapsulates the outcomes of 21 interviews (Kriminalomsorgen, 2020). The responses obtained through these interviews, alongside the information garnered from document reviews and questionnaires, were instrumental in our investigation. This information was crucial in addressing our two pivotal research questions. We adopted a strategic approach focused on extracting pertinent quotations directly from the interviewees' responses. This approach was particularly apt given the qualitative essence of our research questions, thereby underlining the pertinence of qualitative data in our analytical framework.

Participants

We refer to those who answered the interviews and questionnaires in the internal audit report on the NCS as participants, as this indicates a more active role in the study than informants or interviewees (Morse, 1991).

Results from the Internal Audit Report on the NCS

The Pandemic Situation in the NCS

During the pandemic, the NCS was faced with challenging decisions to safeguard the health and lives of inmates. In general, prison populations tend to have poorer health compared to the general populace, which escalates the potential severity of illnesses like COVID-19. The NCS addressed this threat by implementing necessary measures to protect the inmates from the virus (Kriminalomsorgen, 2020).

Given the nature of prisons, where many individuals share close quarters and common areas, the potential for rapid transmission of infections is increased, especially in facilities lacking en-suite showers and toilets. High occupancy rates further intensified these risks (Kriminalomsorgen, 2020).

The NCS's response involved making crucial decisions to mitigate the spread of the virus, such as granting early release, postponing summons to serve sentences, suspending sentences, and facilitating home confinement with electronic monitoring. These actions successfully decreased the prison population and the usage of shared rooms. To offset the impact of suspending physical visits, the NCS implemented alternative measures like extended phone privileges and the opportunity for video visits, alongside additional recreational activities (Kriminalomsorgen, 2020).

From March 13, 2020, in-person visits were suspended. The NCS procured 800 iPads to facilitate digital visitations. Later, visits were cautiously reintroduced where they did not present significant risks of infection or logistical challenges due to staff shortages (Kriminalomsorgen, 2020).

In late March 2020, to further prevent the spread of the virus, the NCS decreed a mandatory 14-day quarantine for all new inmates. During this period, limited staff contact was allowed, with some inmates receiving approval for extended interaction based on individual evaluations. Eventually, new inmates were permitted to mingle with the general population post-negative COVID-19 tests (Kriminalomsorgen, 2020).

The execution of sentences at the probation offices saw a reduction in activities, with a consequent rise in the use of electronic monitoring, leading to an unprecedented number of individuals serving sentences at home. This strategy was a deliberate choice by the NCS, reflective of the ongoing assessments made by the National Crisis Management Unit, considering both the societal infection rates and the implications of relaxing measures within the prison system (Kriminalomsorgen, 2020). The next section will examine the practical implementation of these decisions made by the National Crisis Management Unit.

Managing the Pandemic in the National Crisis Management Unit

The internal report reflects that the NCS displayed remarkable work capacity and a spirit of service, emphasizing the welfare of both inmates and employees. It was noted that communication channels between various levels, such as the NCS, the Department of Justice, and the Department of Health, were effectively maintained. Furthermore, the rapid deployment of digital support by the Department of Information and Communication Technology was a positive development (Kriminalomsorgen, 2020).

Despite these strengths, the report also identified significant areas of concern. It was found that the NCS had not prepared adequate risk assessments tailored to pandemics, nor had they developed comprehensive continuity plans for the Norwegian Directorate of Correctional Service. The training on emergency response systems was insufficient, and the lack of crisis drills compromised preparedness. Additionally, there was confusion regarding the delineation of responsibilities between crisis staff and line management (Kriminalomsorgen, 2020).

Feedback from the regions and units within the NCS, encompassing probation and prison, indicated that during the initial crisis management phase (March 2020 to June 2020), several aspects functioned effectively. This included the success of the implemented measures, efficient information flow and cooperation between units and regional crisis staff, and the decisive and competent action of regional and local crisis teams who maintained their usual roles. Despite the lack of comprehensive practice, the report highlights the resilience of units, staff, and inmates/convicts, ultimately leading to an enhanced organizational capacity through a steep learning curve (Kriminalomsorgen, 2020).

The report also outlines recommendations for improvement. The establishment of the National Crisis Management Unit was delayed, which resulted in a protracted period before a thorough understanding of the situation was achieved. Consequently, helpful instructions and measures were often issued after they had already been independently instituted at the facilities. The initial distribution of roles within the regional crisis unit was ambiguous, making the work challenging. Additionally, the volume of information provided was occasionally overwhelming and difficult to manage level (Kriminalomsorgen, 2020).

To address these issues, the regions/units had proposed several measures. It was recommended that the planning system be revised for long-term scenarios, with additional drills to establish the crisis unit, integrating multiple organizational levels. There is a call for enhanced training to better define staff responsibilities in relation to line functions. Additionally, adopting a unified electronic crisis support tool is advised

to facilitate systematic work and manage information more effectively. Finally, media management should be incorporated into the emergency response system (Kriminalomsorgen, 2020).

We Were Not Prepared

Several participants stated that it was chaotic and unstructured at the start, and they also stated that there was no equipment in place. The three following quotations describe the situation at hand (Kriminalomsorgen, 2020):

“The National Crisis Management Unit got started too late and it took a long time with the decisions, but that worked better over time.”

“We tend to throw ourselves around when something happens.”

“We weren't drilled in establishing the crisis unit, but it eventually worked out.”

The National Crisis Staff highlighted a significant gap in the Norwegian Directorate of Correctional Service's preparedness efforts. Notably, no member had been trained in the agency's preparedness system, and crisis drills had not been conducted. Additionally, there was an absence of a structured approach to training and skills development for such critical situations within the agency (Kriminalomsorgen, 2020).

When inquiring about the proactivity of staff within the Norwegian Directorate of Correctional Service, the average response from the National Crisis Management Unit was a concerning 2 on a scale ranging from 1, indicating to a very little degree, to 6, signifying a very high degree. There was a consensus among participants that there was considerable room for improvement in being more prepared and proactive. The deficiency in risk assessments further underscored the inadequacy of the preparations in relation to the established plans (Kriminalomsorgen, 2020).

In response to inquiries about the readiness of the NCS to manage a serious event like a pandemic, over 70% of the participants at the central and regional levels acknowledged that the organization was “to a small extent” or “very little” prepared for such a challenge.

Different regions reported varied levels of preparedness and crisis practice. Nonetheless, there was a clear consensus on the necessity for more comprehensive crisis management exercises that engage multiple levels of the organization simultaneously. Ideally, these exercises would also involve cooperation with administrative partners, such as health services and educational institutions, to ensure a more robust and unified response to crises (Kriminalomsorgen, 2020).

Planning is everything, but we had no plan

Former president in USA, Dwight D. Eisenhower's statement “plans are nothing; planning is everything” (BrainyQuote, 2024) postulates that by conducting preparations a crisis management team is given a procedural understanding of what can happen. The emergency plan describes how the crisis room should be located and set up, but the crisis room was established in a different location than described by the plan because of the crisis form and scope. Several informants wanted a more pre-set up crisis room that could be clear with plans, accessories, equipment, video conference and so on (Kriminalomsorgen, 2020).

“No, it was not clear which plan that should be used. The plan has been in a drawer.”

“We deviated from the plan too much.”

“It was probably unfortunate that so many platforms were used without a plan for it.”

“The prisons probably have plans for a pandemic. We don't have that in the Norwegian Directorate of Correctional Service. The further into the organization you go, the better prepared they are.”

The contrasting levels of preparedness between bureaucratic staff and prison personnel are starkly highlighted in recent discussions. While bureaucrats seem to lack the necessary preparation for crises, prison staff appear more equipped, owing to their operational roles which frequently deal with various emergency scenarios. Consequently, prisons and probation services have developed and refined their crisis management plans, which stands in compliance with the expectations outlined by the NCS (Kriminalomsorgen, 2020).

The available quotes paint a clear picture regarding the state of readiness within the National Crisis Management Unit, revealing a significant lack of preparedness. This unit's failure to adhere to a well-defined crisis management plan has resulted in an inability to effectively prevent or mitigate crisis situations. This approach, or lack thereof, starkly contrasts with the principles outlined by Pearson and Clair (1998), who stressed the importance of robust crisis management strategies in 1998.

Unclear Roles

There was a notable lack of preparation and practice regarding the different staff roles, commonly referred to as 'F-roles', as highlighted by Lunde (2014). These roles were neither pre-assigned nor rehearsed, which contributed to operational confusion. Training for the National Crisis Management Unit had been planned to precede the establishment of a National Crisis Staff, but it never materialized. According to several informants, this absence of training and practical exercises was a significant factor in the ensuing difficulty to delineate ordinary line operations from crisis staff tasks, as reported by the NCS (Kriminalomsorgen, 2020):

“Hard to wear two hats: be a line manager and a stab-roles at the same time. We should have taken better advantage of the resources.”

“The logging worked surprisingly well, even though it was distributed among many people.”

"It was experienced as a 'split exercise'; the municipal medical superintendent in the various municipalities handled this completely differently and had "trump cards."

These statements indicated that the proactive staff methodology's F-roles, as outlined by Lunde (2014), were not put into practice.

Discussion

Reactivity as a Path to Deal and Learning about Crisis

"This has been the best exercise you can have" One participant observed that dealing with the COVID-19 crisis served as a valuable practical exercise, emphasizing the gravity of the situation and its potential threat to life if the pandemic spiraled out of control in Norway. This view lends weight to the seriousness of the crisis, suggesting that a higher infection rate could have had more severe consequences on the prisons. The slow-burning nature of the pandemic, termed a 'creeping crisis' by 't Hart and Boin (2001), allowed the NCS some additional time to strategize once the severity was recognized.

The preparedness of the NCS to activate a national crisis management unit in such a crisis was found wanting. Analysis indicates that while central levels were largely reactive in addressing the COVID-19 crisis within the NCS, operational levels, including prisons and probation services, exhibited more proactivity by promptly implementing risk-reducing measures upon learning of the pandemic, despite a general lack of preparedness for such a rapidly evolving situation.

The ability of the NCS to adapt quickly, or "throw themselves around," likely contributed positively to the crisis outcome. Nevertheless, the organization's emergency preparedness fell short, with insufficient relevant plans and practice in crisis management, leading to confusion about roles during the crisis response. An informant pointed out that readiness increases further down the organizational hierarchy, suggesting that prisons and probation centers are better equipped and trained for crisis situations. At the directorate level, the primary function is bureaucratic administration, as characterized by Blau (1957) and Fivesdal (2000), contrasting with the day-to-day operational engagement with convicts at prisons and probation centers. It is plausible that the operational core's direct interaction with potentially risky individuals fosters a more proactive stance in their work.

The crisis management at this level is more operational and action-oriented, different from regular office work, which may complicate joint sensemaking, as described by Boin and Renaud (2013), between the directorate and operational levels.

Moreover, the bureaucratic personality described by Merton (1940) might influence the work at the directorate level, which typically revolves around developing and disseminating circulars within the chain of command for operational compliance. In contrast, setting up a proactive National Crisis Management Unit requires a hands-on and timely approach, distinct from the more methodical bureaucratic methodology.

Reflecting on the handling of the COVID-19 situation by the National Crisis Management Unit, it is crucial to consider what the NCS can learn from it. If the NCS

rests on the notion that their turnaround and diligent response to the crisis was an unparalleled learning exercise, their cognitive understanding of learning from the event might be limited. However, by taking the findings of the internal report seriously (Kriminalomsorgen, 2020), the NCS would recognize the need for enhancing their proactive approach to crisis management. The relatively paced progression of the COVID-19 crisis provided some preparation time, which may not be the case in more urgent crises that demand immediate action. Therefore, it is essential for the NCS to advance their crisis management capabilities towards proactive readiness rather than the reactivity observed during the COVID-19 crisis.

At a conference on safety and security, NCS department-level representatives claimed successful management of the COVID-19 crisis without referencing the internal report, although they were aware of its existence (Sørensen, personal communication, December 15, 2022). This omission might be attributed to their reluctance to expose the NCS system's shortcomings or a concern for the organization's reputation, as reflected in their official values and critically commented in research about NCS by Mjåland and Ugelvik (2021). Taking control of the story of what happened in a crisis is described in the crisis management literature as "blame games" (Boin et al., 2015). The NCS can choose a "blame game" strategy, but that will pose challenge for learning from the crisis: if leaders do not acknowledge the report's criticisms, how can improvements in crisis management be realized?

Conclusion

This paper aimed to analyze the response of the NCS at the national directorate level to the COVID-19 pandemic and how it functioned as a top-level authority within the Norwegian correctional system. We posed two primary research questions: first, how did the National Crisis Management Unit address the pandemic at the directorate level, and second, what lessons could the NCS draw from this experience to improve its responses to future crises? Our study rested upon a critical document analysis of the internal audit conducted by the NCS, evaluating the efficacy of their crisis management during the COVID-19 situation (Kriminalomsorgen, 2020).

Our interpretive analysis of the internal audit report suggests that the NCS faced significant challenges in activating and executing its emergency plans amid the unfolding crisis. Furthermore, our review revealed that during the COVID-19 pandemic, the NCS suffered from unclear role definitions, resulting in a blurred distinction between routine operations and emergency management responsibilities. It appears that the NCS fell into a pattern of reaction rather than adopting an anticipatory, proactive crisis management strategy. This finding underlines vital lessons for similar institutions on how organizations might better adjust to and assimilate knowledge from crisis situations.

We recommend that instead of responding passively to crises, NCS must shift from reactive approaches and blame-focused strategies to a more proactive stance. This can be achieved by actively involving all levels of the NCS in training and preparing for potential crises, equipping them with the skills to manage future situations in a more professional and effective manner.

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Approaching the Reality of Seasonal Workers through the Picture Book *Migrant* (Trottier & Arsenault, 2011) to Delve into Intercultural Education and Emotional Literacy: A Multimodal Study

*By María Martínez Lirola**

Children's picture books contribute to their socialization and to broadening their cultural perspective. The main objective of this article is to explore the reality of seasonal workers, specifically the story of a Mennonite family that travel from Mexico to Canada as migrant agricultural workers. To do this, we delve into the multimodal analysis of the picture book *Migrant* (Trottier & Arsenault, 2011). The analytical tools employed in this study are based on the model for reading visual narratives in picture books, proposed by Painter, Martin, and Unsworth (2013) and on Kress and van Leeuwen's (2021) Visual Social Semiotics, which are useful models for the analysis of multimodal texts. The methodology is qualitative-descriptive: the main compositional and interpersonal characteristics of the picture book will be analysed in order to examine the way multimodal meanings help to explore the characters' reality and feelings, which will offer students the possibility of enhancing emotional literacy. The main categories of the analysis will be the layout, framing and focus patterns (compositional meanings) to delve into the portrayal of the characters and into the way the protagonists are foregrounded. In addition, the types of angles, social distance and intimacy, image and gaze will be analysed in order to observe the interpersonal meanings that define the relationships between characters and readers. As a conclusion, the analysis reveals that this picture book is a useful didactic tool to explore both the feelings of seasonal workers and their reality as migrants for a short time. This contributes to introducing intercultural education and emotional literacy in the teaching-learning process, which will benefit children's socialization and their development as global citizens.

Keywords: picture books, intercultural education, emotional literacy, migration, multimodality

Introduction

The benefits of children's picture books for their socialization are unquestionable because they recreate social topics and transmit ideologies and values that can be helpful for children (Nikolajeva & Scott, 2013; Orgad, Lemish, Rahali, & Floegel, 2021; Painter, 2018). Thus, the multimodal representation of social realities in picture books helps children to understand the world at the same time that they develop their cultural schemas. Following Baguley and Kerby (2021), these books are "[...] a powerful ideological tool, one capable of making an unchallenged contribution to social and political discourse" (p. 2).

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This article will focus on a picture book about migration called *Migrant* (Trottier & Arsenault, 2011) for two reasons: 1) it has a simple plot about the reality of seasonal migrants, which is a type of migration that is not normally foregrounded, and 2) it can be used with pedagogical purposes so that children delve into the reality of the said migrants. The fact that picture books are short means that the topic and the emotions associated with them have to be clearly stated through the plot. Following Nikolajeva and Scott (2013): “We may generally observe that picture books tend to be plot-oriented rather than character-oriented. Further, the plot itself is often too limited to allow much development, which means that most characters are static rather than dynamic, and flat rather than round” (p. 82).

The story is about Anna, a child in a low-German-speaking Mennonite family that travels with her family from Mexico to Canada as migrant agricultural workers to harvest fruit and vegetables. The narrative tells readers how she feels: like a rabbit because her family occupies an empty farmhouse near the fields, like a kitten as she shares a bed with her sisters, even a bird migrating, and how she longs for tree-like permanence in a home she can call her own instead of being like a “feather in the wind”. This book describes what it is like to be a child in a migrant family.

The main objective of this article is to explore the reality of seasonal workers by delving into the multimodal analysis of the picture book *Migrant* (Trottier & Arsenault, 2011), paying special attention to the compositional and interpersonal characteristics. The research question is: what are the main interpersonal and compositional characteristics observed in *Migrant* (Trottier & Arsenault, 2011) to transmit the reality and feelings of seasonal workers? Exploring the relationship between the written text and the visual in the said book will shed light on the main difficulties that a Mennonite family has while doing seasonal work in Canada.

The narrative will help children to be aware of the importance of understanding the challenges of seasonal workers by reading Anna’s story as a migrant child. Thus, their system of beliefs will include realities different from their own (Osorio, 2018), which will contribute to the development of critical thinking (Gichuru, Maton, Nagel, & Lin, 2024). In this sense, children will be given the opportunity of thinking about the different reasons why people migrate. In fact, the picture book under analysis describes people migrating as a family to work as seasonal workers. Thus, the stereotypical representation of migrants or refugees as people who arrive in a country with no job and no resources is overcome.

Reading *Migrant* (Trottier & Arsenault, 2011) gives children the opportunity to develop hospitable attitudes towards migrants, because sometimes they come to do the work that people from the main group do not want to do. In addition, children can overcome the “culture of aversion” that sometimes surrounds migrants and refugees (Amin, 2012). Also, this picture book can be useful to help children to understand others’ emotions. In Nikolajeva’s (2018) words:

Yet as picture books are likely to be the first kind of books that emerging readers encounter, they may potentially offer a powerful tool for understanding one’s own and other people’s emotions, in particular for pre-literate readers with a limited ability to make connections between the experiencing of an emotion and its verbal signifier (p. 110).

In addition, respect for cultural differences is promoted with picture books on migration because children can observe and contrast different ways of doing things (Monoyiou & Symeonidou, 2016). Thus, intercultural communicative competence is also developed (Porto, 2015; Tomé-Fernández, Senís-Fernández, & Ruiz-Martín, 2019), which will extend children's perspective on other cultures and on the reality of migrants. Exploring *Migrant* (Trottier & Arsenault, 2011) is also useful to discover migrants' feelings as seasonal workers. In this sense, the book can help children to develop emotions such as empathy through the intercultural aspects observed in the story.

Literature Review

This section is divided in two subsections. The first one focuses on Visual Social Semiotics and multimodality, due to the multimodal nature of the picture book selected. The second one concentrates on intercultural education and emotional literacy, because the picture book selected is convenient for introducing the said pedagogical framework and literacy in the teaching-learning process.

Visual Social Semiotics and Multimodality

The analysis of the choices of semiotic systems that create multimodal texts has been studied in the last decades in order to explore the intersemiosis among them to convey meanings (Martínez Lirola, 2022a; Moya-Gujarro & Martínez, 2022; Moya-Gujarro & Ventola, 2022; Painter, 2018; Pinar, 2015). Visuals play a key role in the transmission of meanings and ideology in multimodal texts in general and in picture books in particular. For this reason, they have to be analysed with the verbiage to see how both modes complement each other (Hamer, Nodelman, & Reimer, 2017). In fact, picture books are useful for children's socialization and development due to the values and ideas that they transmit. In addition, their multimodal nature makes them useful for the acquisition of multiliteracies and for multimodal reading comprehension (Kümmerling-Meibauer, Meibauer, Nachtigäller, & Rohlfing, 2015).

Kress and van Leeuwen's (2021) model of Visual Social Semiotics will be used to interpret multimodal texts. It is based on Halliday's theory of Systemic Functional Linguistics (SFL) (Halliday, 1978), in which three types of meaning (metafunctions) are considered in each text: ideational (what is represented), interpersonal (who is represented and how they interact), and textual (with what means are the people and places represented) (Halliday & Matthiessen, 2014). These metafunctions are called representational, interpersonal and compositional in Kress and van Leeuwen's (2021) model, developed by Painter, Martin, and Unsworth (2013) for the specific analysis of picture books. The main features of the interpersonal and compositional metafunctions, the ones of interest in this article, will be discussed in the following paragraphs. The representational metafunction will be explored in other studies, due to space limitations.

Regarding the interpersonal metafunction, there are three types of systems (Kress & van Leeuwen, 2021): (i) image act and gaze, (ii) social distance and intimacy, and (iii) involvement and power. Painter, Martin, and Unsworth (2013)

refer to social distance, attitude, contact and modality. In ‘image and gaze’, characters’ images are ‘demands’ when characters gaze at the viewer, whereas ‘offers’ present characters without that gaze. ‘Social distance’ focuses on characters’ representation as ‘close-up’, ‘mid-shot’ and ‘long shot’. Painter, Martin, and Unsworth (2013) refer to the system of proximity parallel to social distance by analysing “the closeness or otherwise of the characters to each other in the image at any moment in the narrative” (p. 16). The analysis of ‘involvement and power’ concentrates on the horizontal and vertical angles. Thus, there is involvement with the audience if characters face viewers ‘front on’ in the horizontal angle. Nevertheless, the use of oblique angles involves detachment. By contrast, viewers are given power if they look down, and what is looked down appears vulnerable and weak (Kress & van Leeuwen, 2021, pp. 134 ff.).

Regarding the compositional metafunction, Kress and van Leeuwen (2021) propose the systems of ‘information value’, ‘salience’ and ‘framing’ to explore the way meanings are organised in multimodal texts. Thus, ‘information value’ focuses on the location of elements: the right side of the page is associated with new information and the left with given information; the upper part of the layout is the ‘ideal’ and the lower part is ‘real’. Painter, Martin, and Unsworth (2013, pp. 9398) establish two main types of layout: a) integrated, where wording and visuals come together, and b) complementary, when the visuals and the written text appear in their own space, indicating that they have a different role in the construction of meaning.

‘Salience’ observes if elements are highlighted by their colour, size, colour contrast, etc. In fact, some units of information, i.e., ‘focus groups’ (Painter, Martin, & Unsworth, 2013, p. 91), are given more importance in visual texts. Focus groups can appear around the centre following two patterns: a) centrifocal: centred when the centre of the space is occupied, or b) centrifocal: polarised when different elements are opposed on a vertical, horizontal or diagonal axis. Moreover, elements can appear in regular lines following the itinerating aligned pattern (Painter, Martin, & Unsworth, 2013, pp. 113-117).

Frames also contribute to meaning creation. Following Painter, Martin, and Unsworth (2013): “The work of framing, then, is to suggest boundaries separating or enclosing elements [...]” (p. 92). The presence of frames contributes to detach the image from the readers whereas readers are integrated in the visual when there are no frames. When the only boundary is the page edge, images are ‘unbound’, whereas they are ‘bound’ when images are set within a page margin (Painter, Martin, & Unsworth 2013, pp. 103-109).

Intercultural Education and Emotional Literacy

The selection of a picture book on migrants' reality in this article, including their feelings, justifies that the following paragraphs focus on aspects associated with intercultural education and emotional literacy. The educational perspective proposed by intercultural education promotes respect towards cultural differences and gives importance to intercultural interactions by overcoming inequalities based on cultural differences (Guadamillas-Gómez, 2020; Martínez Lirola, 2022b). This pedagogical perspective respects and appreciates cultural pluralism, approaches diversity in a positive way and educates children to respect different customs, cultures and traditions (Pérez, Banedas, & Beacon, 2021); in fact, different cultural aspects are highlighted, which, following López Medina (2023), "[...] leads the student to experience the familiar and the unknown at the same time, to challenge their own ideas, and to accept ambiguity, the lack of certainties, and world views different from theirs, too" (pp. 11-12). In this way, intercultural competence will be developed, and students will have skills and tools to approach cultural differences in a positive way. This is essential for overcoming anti-immigration ideas (Allen, 2013) that favour racist attitudes and ignore the necessity to welcome and integrate migrants.

Migrant (Trottier & Arsenault, 2011) and most books about migration allow students to approach people from different contexts and cultural backgrounds; i.e., intercultural experiences that broaden children's perspective are promoted (Tomé-Fernández, Senís-Fernández, & Ruiz-Martín, 2019), and diversity is seen in a positive way (Ortiz Medina, Arismendi Gómez, & Londoño Ceballos, 2022).

In addition, the necessity of integrating migrants (Sedmak Hernández-Hernández, Sancho-Gil, & Gornik, 2021) and the deconstruction of stereotypes that portray them as negative 'others' is foregrounded (Rodriguez & Braden, 2018). At the same time, the 'we-they' dichotomy that confronts migrants and the welcoming society is overcome (Drüeke & Klaus, 2017), which favours non-discriminatory attitudes against migrants (Guadamillas-Gómez, 2020).

In fact, picture books on migrants are useful for the development of a global consciousness as citizens, because students have the opportunity of knowing more about people from other cultures and to accept, respect and appreciate diversity (Monoyiou & Symeonidou, 2016; Osorio, 2018). This involves the incorporation of new meanings into children's ideology that will lead to openness to other cultures and to the approximation to cultural differences in a positive way. Apart from this, giving students the opportunity of knowing migrants' reality means exploring the feelings they experience once they leave their country of origin. In this sense, emotional literacy is also present in this study.

Emotional literacy can be defined as the ability to identify, understand, and express emotions in a healthy way (Sharp, 2001). This is essential so that children can examine their own feelings and are able to recognize and empathize with others' feelings. In this sense, empathy has a central role in the development of social relationships where prosocial behaviours and attitudes are essential for positive relationships among human beings, taking into consideration feelings and

understanding them has a central role (Batini et al., 2021; Brokamp, Houtveen, & van de Grift, 2019).

The potential of picture books to develop emotional literacy has been investigated by various scholars (Nikolajeva, 2013, 2018; Papen & Peach, 2021; Sanjuán-Álvarez & Cristóbal-Hornillos, 2022). These studies highlight that using picture books with pedagogical purposes involves the acquisition of social knowledge and emotional learning. In this sense, children receive a holistic education where feelings have an important role (Kucirkova, 2019; Pan, 2019). It benefits the development of emotional intelligence, defined by Hazrati, Fitri, and Wirasti (2020) as “the ability to recognize one's own feelings and the feelings of others, the ability to motivate themselves, and the ability to manage emotions well in themselves and in building relationships with others” (p. 51).

In fact, the development of emotional literacy in children will have an effect in children's wellbeing and behavior, academic success, emotional regulation, intrinsic motivation, interpersonal skills and relationships, among others (Bensalah, Caillie, & Anduze, 2016; Borba, 2018; Chad-Friedman, Lee, Liu, & Watson, 2018). The promotion of emotional literacy from an early age will benefit the relationships children have at school and in their personal life, i.e., positive relationships are developed from an early age (Luther, 2023).

Introducing emotional aspects from early childhood will not only contribute to students' personal development, but they will also be beneficial for foregrounding the importance of the awareness of others' needs and feelings, migrants, in our study (Luther, 2023). Hopefully, this will have an effect on the development of respectful attitudes towards migrants, which will be beneficial for promoting positive social relationships where values, inclusion and respect for cultural differences have a central role (Thompson & Melchior, 2020).

Methodology

Migrant (Trottier & Arsenault, 2011) has been selected to illustrate the reality of seasonal migrants and to delve into intercultural aspects because Anna's family travels to work in a different country. After choosing the book, the model of Visual Social Semiotics proposed by Kress and van Leeuwen (2021) and the specific model proposed by Painter, Martin, and Unsworth (2013) to analyse picture books were selected for the analysis. These are descriptive models to explore representational, interactive and compositional meanings in texts.

This article will focus on the last two meanings, due to space limitations. They will allow exploring the main aspects portrayed in the narrative about the challenges that Anna's family face. Thus, interpersonal meanings will concentrate on the relationships between characters and between them and readers, and compositional meanings will observe the combination of the visuals and the written text to create meanings. The methodology is mixed because some specific double pages will be analysed from a qualitative-descriptive perspective to illustrate some important aspects in the narrative. In addition, some quantitative data will be presented to offer an overview of the main characteristics of the picture book.

Analysis

The analysis of the two metafunctions chosen is essential to look into the meanings packaged into units of information on the page and the interaction between characters and between them and readers.

Compositional Metafunction

The book comprises sixteen double-page openings where the image and the verbal text combine in order to accomplish the two layout patterns proposed by Painter et al. (2013): there are 9 examples where the pattern is complementary (56.25%) because each mode has a different space, which “[...] indicates that each has a distinct role to play in meaning-making, with different page/spread formats varying the ‘weight’ and perhaps the function of each” (Painter, Martin, & Unsworth, 2013, p. 93). The other 7 examples present the written text integrated with the visual (43.75%), as we can see in Figure 1.

Figure 1. Double Page 1



Source: *Migrant* (Trottier & Arsenault, 2011) © Groundwood Books.

The position of the written text varies in the page. There are 8 examples where it appears at the centre (50%). It is at the top on 5 double pages (31.25%) and at the bottom in 3 examples (18.75%). The analysis of framing is important because it contributes “to suggest boundaries separating or enclosing elements [...]” (Painter, Martin, & Unsworth, 2013, p. 92). As observed with the layout, there are two patterns, images are bound on 9 double pages (56.25%) and they “demarcate the story world as more distinctly separated from the reader’s world than unbound ones and may also serve to ‘contain’ or confine the character” (Painter, Martin, & Unsworth, 2013, p. 105) with trees, cupboards, shelves, etc. In addition, there are 7 examples of unbound frames (43.75%), where the only frame is the page edge (see Figure 1), where there is not a marked demarcation between the world of the narrative and the one of readers.

Considering focus patterns, the predominant pattern is itinerating aligned because “[...] the elements are nearly always organised in fairly regular ‘lines’” (Painter, Martin, & Unsworth, 2013, p. 111) in 9 examples (56.25%). For instance, Figure 2

shows the family with this pattern at the moment they are arriving at the house where they will live while they work as temporary workers:

Figure 2. Double Page 2



Source: *Migrant* (Trottier & Arsenault, 2011) © Groundwood Books.

Nevertheless, the pattern is centrifocal centred in other cases (4 examples, 25%) because the characters are located in the centre of the double page. In addition, there are 3 examples (18.75%) where the pattern is centrifocal polarized because characters are presented on two sides of the visual establishing a contrast between them. Table 1 shows the double pages where each pattern appears and the values in percentage.

Table 1. Focus Patterns in *Migrant* (Trottier & Arsenault, 2011)

Focus patterns	Double pages	Values in percentages
Centrifocal; centred	3, 5, 12, 13	25%
Centrifocal; polarised	4, 6, 10	18.75%
Itinerating aligned	1, 2, 7, 8, 9, 11, 14, 15, 16	56.25%

Regarding the position of Anna in the page to see up to what extent she is the visual theme often, she is on the left five times, the place of given information, and she does not appear on 5 double pages, which shows that she is the visual theme on 6 double pages, more than one third (37.5%). Table 2 shows that Anna's position varies in the narrative.

Table 2. Position of the Protagonist in the Double Pages

Position of the girl on the page	Absolute values	Values in percentages
Centre	0	0%
Right	6	37.5%
Left	5	31.25%
No representation of the girl on the page	5	31.25%
Total number	16	100%

Most written themes are unmarked because they coincide with the subject in the 32 declarative sentences and with the wh-element in the two wh- interrogatives. It is

significant that out of the 32 themes in declaratives, there are 9 about Anna (28.12%) and 3 about her family (9.3%). In addition, there are 3 themes about animals (9.3%): 'Those rabbits', 'a kitten' and 'the geese'. There are also 14 marked themes that are adverbials mainly of time and place such as 'now', 'at night' or 'in the other room'.

Interpersonal Meanings

The analysis of the system of image and gaze in visuals reveals that there are only two examples of demands (12.5%, double pages 9 and 10), whereas most visuals are offers (87.5%, 14 examples). This suggests that readers are invited to contemplate the arrival of migrants to work, the work they do, the challenges they have and how they leave once they have finished their service as temporary workers. It is also remarkable that there is no eye contact between characters in this picture book. This is a way of reinforcing that, although they travel as a family, they have to do individual work: the reason for the journey is working, getting money and going back home until the next season.

Nevertheless, there is no doubt that the characters represented are relatives because they appear wearing similar clothes, they are close to each other and joined by vectors, especially on double pages 2 (see Figure 2, which corresponds with the moment they arrive at the place where they will work) and 16, which shows the moment they are leaving once they have finished their job. This is clearly connected with the system of orientation proposed by Painter et al. (2013) and its reinforcement of a relationship of solidarity (p. 17) between the family members because they all experience the same challenges once they start their journey as seasonal workers.

The analysis of the system of social distance and intimacy observes if there is a distance between the audience and characters' reality. The fact that the majority of the visuals are close up (56.25%, 9 examples) and the rest are middle shots (43.75%, 7 examples) suggests that readers are invited to approach the reality of the migrants represented so that they can sympathize with the reality of temporary workers and be aware of the challenges and difficulties they face once they arrive at a new place to do some seasonal work.

Regarding the system of involvement and power (attitude in Painter, Martin, and Unsworth's (2013) classification, the fact that all the horizontal angles are frontal shows that the illustrator has chosen this visual strategy to establish connections between the reality of the characters in the story and the audience. In this way, readers are invited to think about what is involved in being a seasonal worker and the emotions and feelings they experience working abroad, doing the jobs that people from the main group do not want to do. There are 12 examples of vertical angle, where characters are represented at eye level (75%), as we can see in Figure 3.

Figure 3. Double Page 3



Source: *Migrant* (Trottier & Arsenault, 2011) © Groundwood Books.

In addition, there are 4 double pages (25%) where the vertical angle is low, i.e., the audience is low and Anna is reinforced as the protagonist of the picture book appearing at the top of the page. Table 3 summarizes the main interpersonal characteristics of the picture book.

Table 3. Interactive features in *Migrant* (Trottier & Arsenault, 2011).

Image act and gaze	Social distance and intimacy	Horizontal angle and involvement	Vertical angle and power
Offer 14 (87.5%)	Close-ups 9 (56.25%)	Frontal 16 (100%)	High 0
Demand 2 (12.5%)	Middle shots 7 (43.75%)	Oblique 0	Eye level 12 (75%)
	Long shots 0		Low 4 (25%)
Total: 100%	Total: 100%	Total: 100%	Total: 100%

An important aspect in this picture book is the portrayal of the 'we-they' dichotomy (Drücke & Klaus, 2017) that portrays Anna and her family as different from the main group. Notwithstanding migrants are paid for the seasonal work they do, they are not integrated into the main society. Figure 4 offers the compositional and interpersonal analysis of a double page where the said dichotomy is highlighted.

Figure 4. Double Page 10



Source: *Migrant* (Trottier & Arsenault, 2011) © Groundwood Books.

This is one of the 7 examples (43.75%) where the layout is integrated because the written text and the visual share the space. In this case, the written text appears in a prominent position, in the centre of the right of the double page. The written text is just behind Anna, and it describes her representation in the visual observing the people from the main group represented on the left of the page:

“She listens to all the voices – to the woman with pink hair at the cash register, to the tattooed men who put cans on the shelves. But she only understands some of their words. Dollars. Peas. Meatballs”.

Regarding framing, this visual is bound (there are 9 examples, 56.25%) because the different characters are framed by the objects and shelves situated next to them. There are different focus groups in the visual because they illustrate the different social actors that surround Anna in the supermarket. The characters at the top of the visuals appear in a line. Nevertheless, representing a woman and a child at the top right corner and a man on the left corner while Anna appears in the middle of the page show an example of the centrifocal polarized focus pattern. There are vectors joining Anna and the tattooed man on the left and the woman and the child on the right, which highlights that Anna is surrounded by strangers, i.e., by people who belong to the main group. Although Anna is hidden behind the fruit at the bottom of the page, she is given importance by appearing on the right, next to the written text where she is the written theme and looking towards the left of the page, inviting readers to do the same.

The first thing observed in the interpersonal analysis is that this is one of the two visuals (12.5%) in which there are characters from the main group of society (the woman at the top of the page and the tattooed man on the left) looking at the audience, requesting a direct answer. Regarding the system of social distance and intimacy, the representation of Anna at the bottom of the page presents her as an example of close-up although there is a higher distance between the rest of the

social actors represented and the readers. Finally, regarding involvement and power, the frontal horizontal angle brings what Anna observes in the supermarket close to the audience. In addition, representing characters at eye level helps readers to understand Anna's feelings because the protagonist and the readers are presented at the same level.

Discussion

The multimodal analysis provided is useful in understanding the reality and challenges that temporary workers and their families face. For instance, they need to adapt to a place for a limited time, they just do their job and leave until the next season, and they are not integrated into society. This picture book not only focuses on the difficulties of the journey as migrants but also on the difficulties of living in empty farmhouses with basic living conditions. The general characteristic of temporary workers having to leave the place where they live and work when the season is over due to being temporary workers is present throughout the narrative, showing geese flying from one place to another. Thus, we can read the following sentence on double page 1: "There are times when Anna feels like a bird. [...] Her family is a flock of geese beating its way there and back again". Moreover, the following sentence appears on double page 16: "But fall is here, and the geese are flying away. And with them goes Anna, like a monarch, like a robin, like a feather in the wind". Consequently, *Migrant* (Trottier & Arsenault, 2011) helps children to see that there are different types of migrant and the reality of temporary workers is given visibility, which will contribute to broadening the cultural schemas of children (Monoyiou & Symeonidou, 2016) by knowing Anna's story.

In fact, the picture book portrays diversity (Ortiz Medina et al., 2022) and foregrounds the importance of integrating migrants that work in a place for a limited time (Sedmak, Hernández-Hernández, Sancho-Gil, & Gornik, 2021). As a result, the book introduces an intercultural experience through the narrative, so that children can extend their cultural perspective (Tomé-Fernández, Senís-Fernández, & Ruiz-Martín, 2019) at the same time that they learn the main principles of intercultural education and develop the intercultural competence. This will favour that the 'we-they' dichotomy is overcome (Drueke & Klaus, 2017) and non-discriminatory attitudes are promoted (Guadamillas-Gómez, 2020) because children are aware of the socio-economic contribution of migrants to the welcoming society. In fact, *Migrant* (Trottier & Arsenault, 2011) is useful to extend children's global consciousness (Osorio, 2018) by delving into a reality different from their own.

The fact that Anna is able to refer to her feelings openly throughout the narrative helps children to see the importance of permanence in a home without having to travel to a new place to work. Consequently, emotional literacy is given importance so that children not only approach the reality of seasonal workers, but they are also able to look into their feelings and the difficulties of not having a permanent place to live. Thus, students can reflect upon the importance of wellbeing and emotional regulation to live a balanced life (Bensalah, Caillie, & Anduze, 2016; Borba, 2018; Chad-Friedman, Lee, Liu, & Watson, 2018), which are emotional

aspects that are part of the challenges that temporary migrants face. This can be associated with the intercultural communicative competence because children will be able to be familiar with social realities different from their own and with the challenges associated with them. Ergo, in the same way as Luther (2023), this study portrays the benefits that the development of the said competence will have on students' relationships at school and outside it.

The analysis of *Migrant* (Trottier & Arsenault, 2011) presented in this article favours emotional awareness and social understanding of the reality portrayed in the story (Batini et al., 2021; Brokamp, Houtveen, & van de Grift, 2019). This picture book allows going beyond the meanings transmitted by the visuals and the verbiage by incorporating socioemotional aspects in the story. This will have an effect on students' education because they are offered the possibility of delving into their own feelings and on migrants' feelings by analyzing the reality portrayed in the picture book under analysis (Hazrati, Fitri, & Wirasti, 2020; Nikolajeva, 2013, 2018).

This picture book about migration is very useful in making children reflect on the experiences that migrants have when they travel to a different country to work. Ideologically, this picture book is useful in overcoming the general tendency to represent migrants as people who reach the countries of arrival by illegal means and in need of a house and a job once they arrive. In this case, migrants live on a farm and are paid for their job, but they are not integrated into society. This means that the 'we-they' dichotomy is present in their reality (Drücke & Klaus, 2017). For instance, on double page 9, there is an explicit reference to that dichotomy when a child from the main group stares at Anna and her family: "When they shop for groceries at the cheap store, Anna is shy because people often stare".

It is also interesting to observe that the story is narrated from the perspective of the main group through the narrator's voice although *Migrant* (Trottier & Arsenault, 2011) foregrounds the reality of farmworkers. There are only two questions asked by Anna associated with being in the same place: "What would it be like to stay in one place—to have your own bed, to ride your own bicycle" (double page 2) and "What would it be like to be a tree with roots sunk deeply into the earth—to watch the seasons passing around you the same way the wind passes through your branches?" (double page 13).

The role of the teacher in the teaching-learning process is essential so that students are able to make the most of the benefits of the picture book selected and of delving into the richness of cultural differences and the importance of developing attitudes that promote inclusion and values while they learn (Thompson & Melchior, 2020). Consequently, students are invited to reflect on the challenges that Anna and her family face, to overcome the attitudes of superiority of the main group, and to develop welcoming and empathic attitudes towards migrants, which will benefit the creation of more inclusive and open societies. In fact, introducing emotional literacy in the classroom benefits fighting prejudices and discriminatory attitudes against migrants (Kucirkova, 2019; Pan, 2019),

The representation of seasonal workers in other picture books will be explored in future studies to observe the extent to which characters' feelings and emotions are present in them. In addition, upcoming studies should also contrast the representation of seasonal migrants with other types of migrant, such as those that are forced to

travel due to war in their country of origin. In addition, students' responses to the use of books like the one analysed should be studied in detail, in order to determine if their level of emotional literacy is developed and in what ways.

Conclusion

The multimodal analysis of *Migrant* (Trottier & Arsenault, 2011) has shed light on the reality of seasonal workers, migrants that are not given much attention in literature for children. Thus, using this book for pedagogical reasons and introducing children to their multimodal analysis will contribute to broadening children's perspective on migration. At the same time, children will have the opportunity to empathize with the difficulties of seasonal migrants who do jobs for a limited time. Ergo, *Migrant* (Trottier & Arsenault, 2011) epitomizes the importance of foregrounding the work done by families who leave their homes to travel to work in a new country for a limited time.

Using the book analysed in the teaching-learning process is useful to help children to understand migrants' needs and experiences. In this sense, *Migrant* (Trottier & Arsenault, 2011) is useful to expand the idea of 'otherness' by thinking about the importance of others' work, paying special attention to seasonal workers. The pedagogical use of the said book can be beneficial for the development of hospitable attitudes towards migrants in general and towards seasonal migrants in particular. Consequently, children will observe that there are different types of migrant, which will broaden their cultural schemas. The book will promote prosocial emotions such as empathy, once children are aware of the difficult conditions associated with seasonal workers.

In fact, children are invited to respect and thank the work that these types of migrant do, which is a way of introducing an intercultural perspective in the teaching-learning process. In this sense, the ideology that is promoted highlights that children should support integration. As a result, the interpersonal and compositional analysis provided contributes to bringing the reality of seasonal workers closer to readers. For instance, representing characters at eye level invites readers to identify with the reality of the characters. In consequence, children reading this book will acquire some knowledge of a minority inside a minority, because seasonal migrants are not normally foregrounded in literature for children. Thus, children's social consciousness will be expanded by being exposed to the difficulties of families who travel to another country to work for a limited time. Hopefully, as a consequence, children will contribute to the social transformations that are necessary to treat migrants in general and seasonal migrants in particular with respect. These transformations will mean working for the improvement of migrants' working conditions and considering valuable the work that migrants do in the countries of arrival.

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Adopting Engineering Problem Solving Framework for Applied Art Training

*By Ng Woon Lam**

In this paper, I will share my experience of how an engineering problem-solving framework can be adopted as an effective art pedagogy, especially for training applied art students. The major difference between applied art and fine art students from the perspective of training outcomes is the difference in their professional practice. While a fine artist is involved in constantly exploring new ground, an applied artist is also required to perform a task to fulfill the field-specific demand. While a fine artist may create a sculpture for sole visual enjoyment, a product designer needs to develop a product for its physical application. A car has to be driven. A cup has to hold liquid. Therefore, to tailor the needs of applied art students, a structural approach has its advantages. A new pedagogical approach borrows from the robust structure of engineering and scientific problem solving, the cause-and-effect diagram (also named the fishbone diagram) to develop a training approach for applied art foundation students. This engineering framework illustrates how a complex art-creating process can be deconstructed. Hence, variables can be introduced to make the overall creative exploration more efficient. A few students shared their experiences after participating in this art training approach.

Keywords: cause, effect, fishbone, art, Ishikawa

Introduction

COVID-19 has speeded up the way educators need to relook at the effectiveness and efficiency of different types of training. In art schools, studio-based training was a norm before COVID-19. Face-to-face education is considered the most direct interaction that students can have either for fine or applied art. Covid has since shifted the norm. Online learning and emergency remote teaching have started to be in demand. Therefore, the effectiveness of various remote learning models was studied and compared (Barbour et al., 2020). While fine art and applied art do not share all common objectives, this study focuses on how a structural approach could influence applied art skill training. In a way, the approach may also be argued to have a similar impact on any form of remote learning. This is supported by another research that shows the advantages of the systematic approach that is used in online learning (Hodges et al., 2020).

The commonly agreed difference between applied art and fine art outputs is the predefined outcomes are anticipated from applied art within a preset timeline. While both art forms produce creative solutions, applied art is limited by additional constraints which may include producing pre-defined outcomes or business requirements. Coincidentally, its problem structure and working function match how an engineering team resolves daily issues. Therefore, this study aims to understand the

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feasibility of adopting the engineering problem-solving framework for applied art training. The research questions may summarize the scope of this study.

Research question 1: What are the aligned logics observed between applied art training and engineering problem-solving?

Research question 2: What are the differences between a traditional art training method and an art training experiment using the engineering problem-solving framework? What are the strengths and weaknesses of the latter based on interviewees' feedback?

Literature Review

As argued by the principle of constructivism, learning is a process of searching for meaning therefore the answer lies in the individual who constructs the meaning. This process involves building the outcome based on an individual decision. Coincidentally, it is remarkably similar to an artist's creative process, in which the artist decides and defines the final output. The constructivist's instructional model also emphasizes students developing independent solutions while promoting learning that links personal creation and practical skills. These factors are again parallel to an art student's learning outcome, especially for an applied art student who is required to face field issues while maintaining creative outputs (Xuemei & Lixing, 2011).

The training based on a constructionist's concept states that education should aim to develop a student's ability to learn how to learn, to resolve problems independently, and to invent new solutions (Xuemei & Lixing, 2011), while inquiry-based teaching and learning similarly state that it teaches real-life practical skills. The latter is comparable to engineering training (Guo & Lu, 2011). Therefore, this indicates a linkage between professional training for both engineering and applied art.

When engineering education is mentioned, problem-solving skills and frameworks immediately come into the picture. Problem-solving is the core of engineering training. Engineers from theoretical research to frontline manufacturing of final products, all involved in technical problem-solving.

Looking at another area of study related to the instructional model, the 8 principles of the instructional model suggested by Savery and Duffy (1995) for problem-based learning (PBL) may clarify the detailed structure of learning. First, it requires the learner to have a clear understanding of the problem to be resolved. In principles 2 to 5, the authors further argue the importance of ownership for the learning process to be effective. The teacher acting as a consultant may dictate in defining the learning scope, while students though constrained by the scope, define and construct their learning centralizing around the pre-defined problem. The working process aims to expand the perspective of learning than restricting students through procedural instructions. The learners have the freedom to search for new possibilities in solving their defined problem under the big umbrella of a pre-defined problem statement. Principles 6 and 7 support students' freedom in exploring new grounds while principle 8 is a reflection process of students' learning. These 8 principles align well with both training in applied art skills and engineering problem-solving.

Starting with principle 1, a learning objective is defined. For applied art skill training, any technical skill acquired is targeted to resolve specific issues though some

skills may be very fundamental like color theory or design concepts. Therefore, a clear learning objective is always set. Principles 2 to 5, require the learner to own and design the task and further set the working constraints. This is common for art students. Based on a topic learned each art student will creatively decide their practical outcomes while working with the principles or theories taught. Principles 6 and 7 require the instructor to function as a facilitator to challenge students' views and moves during the search for a solution and encourage the students to discover new possibilities through accepting alternative views or changes of contexts. That is exactly how an art instructor functions. The instructor only provides feedback and critique after looking at the progressive outputs of each student while the outcome may all be set differently. The art critique sessions align well with Principle 8 to provide the opportunity for the students to reflect on the overall learning process and outcomes (Savery & Duffy, 1995).

These steps further align with the engineering problem-solving process. An engineer first defines the problem or is tasked with it. The engineer during the search for a solution, collaborates with a team of other professionals who may provide different guidelines, knowledge and/or constraints that help the engineer generate the most cost-effective solution. This reflects the open structure of how an engineering solution is developed. Compared with applied art training, similar working logic can be identified.

As the engineering environment is fast with the current speed of technological advancement, its problem-solving framework has been robustly developed. Engineers could therefore fully rely on this tool and respond to issues efficiently. Therefore, it is worth studying how applied art training may borrow the knowledge of engineering problem-solving. This framework may assist applied art pedagogical development in identifying the most efficient learning process and defining the most appropriate logic for the learning outcomes.

Methodology

The research adopts the quality methodology as the major portions of the research work were related to a comparison between the engineering problem-solving structure and the applied art training pedagogy, my personal engineering and art teaching experience, and training and quality interviews of participants' learning experience. Below are the procedures:

First, the nature of the creative process was compared to the engineering problem-solving approach to understand their structural similarity or differences. It was followed by my experience sharing when an engineering problem-solving approach was adopted for training art students. The fishbone diagram serving as the heart of engineering problem solving, was adopted to demonstrate its capacity in analyzing and resolving a technical applied art issue.

In total 5 art students participated in the qualitative interviews and provided feedback related to 3 topics, namely, the current mainstream art training and its issues, their experience with the engineering problem-solving approach and the strengths and issues using an engineering problem-solving approach for art training. These 5 students were selected because they had also experienced diverse types of art training

before they participated in using an engineering problem-solving approach for their training. The interview questions asked are listed below:

1. Briefly discuss any of your other regular art training classes. did you see a specific training model any of the instructor was using?
2. What do you like about the training approaches?
3. What do you dislike about the training approaches?
4. Did you know before you participated in the research that the trainer was using an engineering problem solving approach to conduct applied art skill training?
5. What are the strengths and weaknesses the engineering problem solving approach when it is used to train applied art skills?
6. Do you have any other feedback?

Results & Discussion

Comparing Creative Process and Engineering Problem-Solving

Visual art skill training involves developing students' creativity. Training of creativity somehow is thought to reject any procedural process of instruction. However, the difficulty also lies in defining the level of freedom in instruction. Therefore, the training may borrow learning and problem-solving process that are highly similar to an artist's process of art creation as described by Savery and Duffy's problem-based learning (PBL) approach – the constructionist's framework (Savery & Duffy, 1995). Below, I use an example from my teaching of value design (or tonal design) in drawing and painting as a comparison.

An assignment given to art students only broadly mentions the scope while students have the freedom to explore and define their problem statements differently from one another. For a value design exercise, students first define the mood or weather they prefer. This aligns with principle 1 when the student defines and owns the problem. The research, exploration, trials, and drafting process again align with principles 2 to 5 of the instructional (Savery & Duffy, 1995). Students, thereafter, carry out their research related to their defined weather or mood (Ng, 2020). The research could cover historical images from master artworks, observations of real situations, and explorations based on the instructional concepts provided by the instructor. Each student owns the problem and directs one's working process, while the instructor may provide guidelines. Aligning with principles 6 and 7, the art instructor acts as a consultant during students' explorations. The art critique process aligns with principle 8 as elaborated in the literature review (Schön, 1987; Clift, Houston, & Pugach 1990). It provides feedback on the submitted assignments. Therefore, what applies to PBL should work well with applied art training.

Coincidentally, PBL also aligns with the engineering problem-solving approach. Engineering training involves planning, the design of experiments, data collection, forming a hypothesis thereafter proposing the most feasible solution and anticipating outcomes. A parallel comparison between engineering problem-solving and applied training is shown in Table 1.

Table 1. Comparing Engineering and Applied Arts Training Scopes

Stages	Engineering	Applied Art
1	Problem Statement	Problem Statement
2	Planning, exploring, and brainstorming. Define modular approaches and sub-tasks	Planning and drafting. Deconstructing the problems to multiple sub-tasks.
3	Research	Research
4	Forming hypotheses, defining the possible working direction	Selecting probable working variables for explorations
5	Designing and executing experiments, and collecting data	Experimenting with selected variables and drafting various possibilities.
6	Analysis of data and conclusion. Coming up with recommendations.	Image analysis finalizing the working process and completing the assignment. Providing critique.

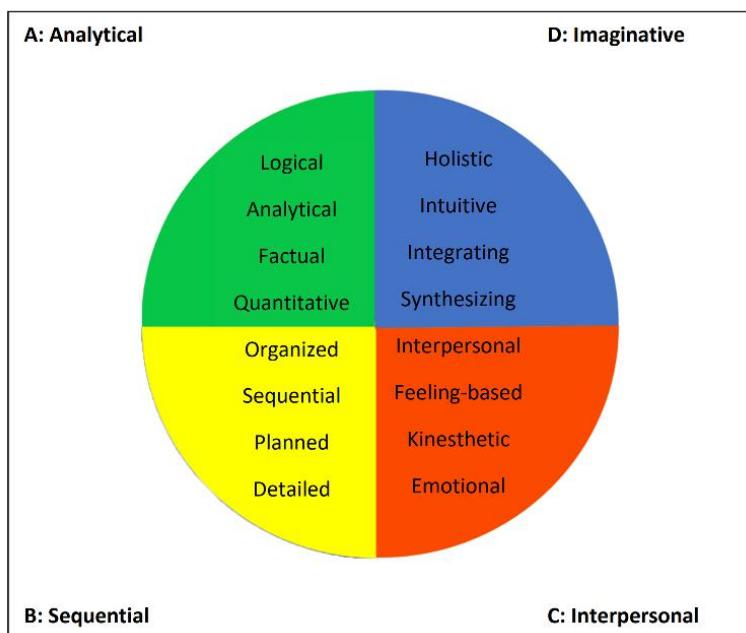
Each engineering stage aligns with the work scope of an applied artist. While an engineer uses a Pareto diagram to define the most critical problem, an applied artist is given a pre-defined outcome to achieve or a self-directed target to work on (Table 1, Stage 1). The most relevant and important items that the applied art training may borrow from the engineering problem-solving framework are stages 2, 3, 4, and 5.

Engineering problem-solving is based on the cause-and-effect diagram (also named the fishbone diagram) developed by Ishikawa (1985). The idea-generating process for the cause-and-effect diagram is done through a brainstorming process (Lumsdaine & Lumsdaine, 1994). The process of brainstorming covers all the possible areas of the causes of the problem, including manpower, machines, measurements, materials, methods, and environment summarized as 5M1E (Koripadu & Subbaiah, 2014). This forms stages 2 to 4, from planning, exploration, research and defining possible working direction. In applied art, the fundamental visual art elements are equivalences. For example, the presentation of the mood of an image is related to the selection of tone, color, shapes, and space. While the problem may be deconstructed in applied art or engineering, some input factors may be interdependent. These interdependent parameters make the adjustment of each parameter more complex. Therefore, the advantage of a robust framework is immediately recognized. It allows a less sophisticated entry. Identifying influential input factors becomes the most important initial step before dealing with the interdependence of certain input factors.

Due to the complexity and possible interactive factors within the 5M1E, in stage 5, an engineer carefully designs experiments, managing and blocking factors to identify the causes of a defined issue and the effect. If an artist could borrow a similar thought, the creative exploration process can be controlled within a more probable scope. This improves the process of identifying more potential causes hence reducing unnecessary exploration of less likely factors. As applied art is part of a business operation, timesaving is therefore critical as part of the resource-saving process. Therefore, this paper studies the possibility of using this systematic training approach for applied art students working with creative ideas. That is also coincidentally supported by the study of '*Classroom Teaching Through Inquiry*' in which both cause and effect framework and creative idea generating are discussed together as part of the whole training process (Buch & Wolff, 2000).

Another piece of evidence is from Hermann's Whole Brain Model (WBM). Hermann's Brain Dominance Instrument (HBDI) suggests four quadrants of different brain functions. Each quadrant governs diverse ways of thinking. Quadrant A of the HBDI relates to analytical thinking which is connected to logical, factual, technical, and quantitative analysis. Quadrant B structures the thinking process in proper sequence, connecting closely to the problem-solving process. In quadrant C, the interpersonal skill is less relevant to this research, while in quadrant D, the imaginative motive is highly relevant to artists searching for new ground or the unknown (Hermann, 1999). The finding further confirms that creativity is not confined to a certain HBDI thinking quadrant. It maps across different quadrants (Hermann, 1999; Lumsdaine & Lumsdaine, 1994).

Figure 1. Four Quadrants of Thinking Modes – Hermann's Whole Brain Model



Source: The theory behind the HBDI and Whole Brain technology. Better results through better thinking (Hermann, 1999).

Meneely and Portillo also summarized based on Goldschmidt's study of the creative design process that creativity is a parallel process through different combinations of all four quadrants of brain functions. *'The ability to synthesize a novel concept with a myriad of programmatic constraints becomes a hallmark of the successful designer'* (Goldschmidt, 1999; Meneely & Portillo, 2005). The authors further mentioned that *'When students were less entrenched in a specific style of thinking they measured higher creativity using Domino's Creativity Scale.'* (Meneely & Portillo, 2005).

A design process study has indicated that the process involves two distinctive parts. First, the open-ended process allowed students to explore ideas based on their personal preferences. However, the second process imposes constraints to provide functionality with that design (Amabile, 1983). This aligns with the engineering problem-solving process while an engineer has the freedom to use any ideas to

overcome an issue, there are desirable outcomes to fulfill within prescribed engineering constraints for example a maximum allowable value of an adjustable machine parameter.

A discussion related to the integration of problem-solving with engineering design also shares many similar characteristics of how an applied artist will develop an artwork. It involves idea generation. It is carried out through planning which leads to a brainstorming process. This is highly similar to an early-stage artwork development process - the imaginative, synthesizing, and intuitive process in artmaking. Another stage that is also comparable to the art-making process is the idea judgment stage. In this stage, both engineering design and art-making involve critical thinking and decision-making (Lumsdaine, Shelnutt, & Lumsdaine, 1999).

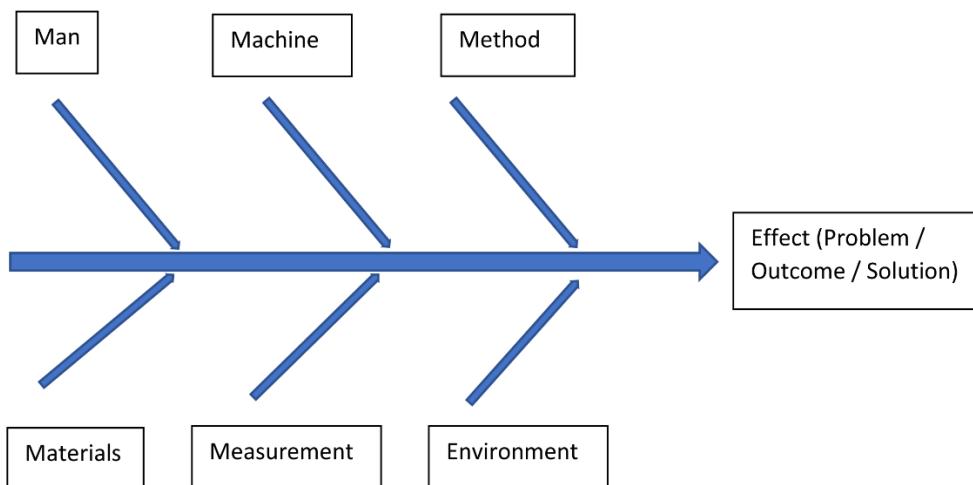
The analytical and structural approach of engineering design and planning may not be completely relevant to fine art, but it matches well with applied art. Applied art needs to respond to its market demand or its client's requirements. A structured and analytical process maximizes the output and minimizes the waste of resources in working on less feasible trials. Engineering problem-solving in industries requires a systematic and fast response to avoid unnecessary delays working in highly stressful environments. How does an engineer handle that? The answer lies in the system provided. The system here refers to a robust framework that has been developed in all the mature engineering industries. As the problem-solving structure is robust enough, an engineer does not have to go under the stress of not knowing how to proceed in front of a complex issue. Sometimes, the technical issue could even involve a new area of science that is waiting to be discovered. The problem-solving framework though does not provide an immediate answer to the challenge, it serves as a robust framework for the search for feasible solutions. In the applied art industry, similarly, artists working on a task are given a time limit. Adopting the same working framework reduces unnecessary working stress when creative solutions are evolving.

The formal documentation process in design engineering is another process that is highly relevant to applied art. All the experience and exploration processes through a proper documentation process make every discovery or invention transferable. This benefits any future research and sharing of resources (Lumsdaine, Shelnutt, & Lumsdaine, 1999).

Epstein and peers discussed the benefit of broadening the skills of a professional as a process of nurturing creativity (2008). The brain-storming process within this engineering approach is similar. It pushes the engineer to step into areas that they are less familiar with. Comparing Dali's artistic process with this engineering problem-solving approach, either the process of capturing ideas from 'dreams or daydreams' like Salvador Dali or the broadening of knowledge for generating new ideas. Dali (2013) and Mavromatis (1987), are both similar to the brain-storming process of engineering problem-solving. An engineer has to constantly look for an innovative move to solve problems because most of the high-tech engineering field does not accept progressive improvement. Not surprisingly, most will require a quantum-leaping level of improvements. For example, in the storage industry, from 128Gb, the next will be 256Gb which is a 100% improvement. No one will accept 129Gb as an improvement. Therefore, the process of electronic innovation is called the state of the art. Just like artmaking, artists could not be satisfied by repeating what can be done

and just doing it a bit better. Therefore, the idea-generating process becomes critical to both engineers and artists. The structural and innovative tool used by an engineer is described in Figure 2.

Figure 2. The Fishbone Diagram for Engineering Problem-Solving



Source: Using fishbone diagrams in inquiry-based teaching and learning for engineering education. International Conference on Information and Management Engineering, Berlin, Heidelberg (Guo & Lu, 2011; Ishikawa, 1990).

Figure 2, the fishbone diagram invented by Kaoru Ishikawa in 1943, is also named the "Cause and Effect Diagram", looking like a fish skeleton (Guo & Lu, 2011; Ishikawa, 1990). Therefore, it is often referred to as the fishbone diagram. It acts as a systematic problem-visualizing tool to assist engineers or scientists in investigating all the major or possible factors related to a defined problem or targeted output. The causes are modularly categorized. The effect is a defined problem or an objective set by the user (Liliana, 2016). Guo discussed how the fishbone diagram could work together with the inquiry-based teaching approach. Based on the inquiry-based teaching approach, the diagram was capable of nurturing engineering students' creativity. Students demonstrated self-analysis and critical thinking through this investigative journey. It diverted students from accepting prescribed solutions (Guo & Lu, 2011). The brainstorming process working like mind mapping, pushes students to discover new possibilities instead of accepting the obvious (Koripadu & Subbaiah, 2014). A renowned watercolor instructor Robert A. Wade discussed the need to 'engineer' tones of an image as an important part of the whole compositing process. He uses the word 'engineer' which matches exactly with engineering practice.

'... you will come to realize you can engineer changes. ...' (Wade, 2002, pp. 18-20, 27). His statement further indicates the need to have a structured process to work with image design. Based on his argument, for example, the tonal design of an image can be carried out. In the next sub-section, I will elaborate on how the fishbone diagram can be applied to design the mood or weather of an image through a deconstruction process.

Experimenting with the Engineering Problem-Solving Approach as an Art Pedagogy

While I am an experienced visual artist and an art instructor, I was also trained as a professional engineer. I had nine and a half years of engineering experience working in the high-tech electronics industry. My daily routine was to carry out experiments, to continuously come up with innovative solutions or quantum-leaping breakthroughs. The engineering problem-solving framework was the most effective tool which helped me modularly explore different areas of possibilities to arrive at innovative solutions.

While the nature of high-tech engineering work is vastly different from artmaking, I have realized the usefulness of this modular process in isolating complex variables and later learning their interdependence if that does exist. Being able to isolate input parameters, I am able to explore each modularly. There are two significant advantages.

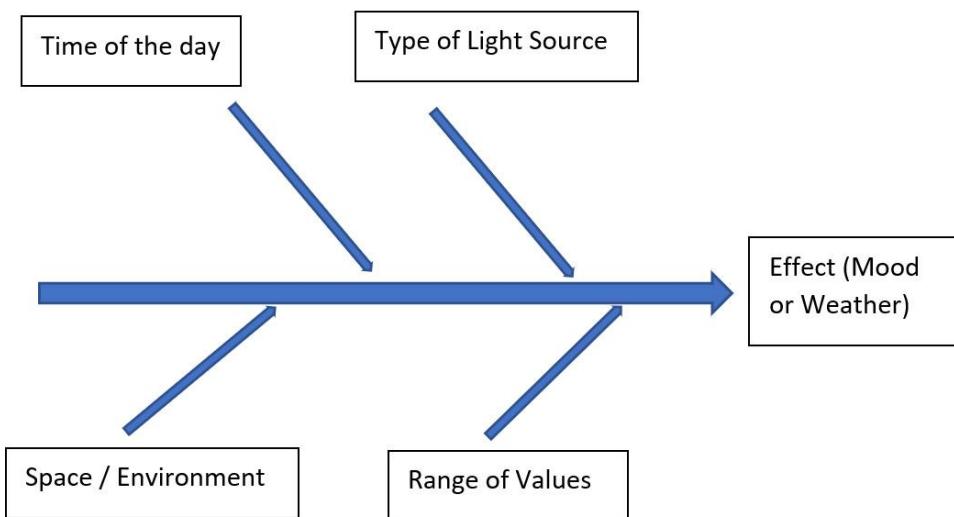
The first advantage is the ease of knowing the impact of a change made or technically termed as an input variable introduced. The responding signal is stronger when a parameter can be well isolated in an experiment. A similar approach is practiced in art training or an artist's drafting process: - the black-and-white drawing. Therefore, it has been one most important foundations of art skills at all art institutions for hundreds of years. To elaborate on its practicality, before working in color, painters like to explore their compositions in black and white. It is called the tonal or value design process of an image. That helps artists focus on just one attribute of color, the tone⁷. Hue and chroma are temporarily removed to reduce the complexity during this early composing stage. Hues can be later matched with the values designed.

The second advantage is that it reduces the scope of the trial-and-error process. When the range to explore is well defined, it enables the artist or the student to progressively explore each parameter within or outside the commonly accepted scopes. A common misunderstanding of the creative process by laypeople or entry-level students is that they think trying out things randomly with a lot of courage is creative. However, in reality, all human beings have certain behavioral habits and are bound by these constraints. Here is an example that I have observed many times in drawing classes. Many entry-level students may think that when they are drawing randomly, they will arrive at a higher level of creativity. However, they do not realize that those 'random' actions are also bounded by many pre-set parameters or they may be termed as constraints, for example, one's strength, size, length of hands, and preferred materials. All these parameters form many layers of constraints. In the end, they are repeating their drawing habit without knowing it. A study related to human habits answers this well. The study has shown that habits are associated with desirable outcomes and are strengthened slowly. To inhibit a behavioral habit, one effective way is to introduce a different context. The change in context can be the environment or an imposed variable that intentionally suppresses the person's habit, while the person knows it (Wood & Rünger, 2016). The author used an example related to eating habit change. It has been shown that an unhealthy eating habit can be improved if the accessibility of those foods is reduced (Sobal & Wansink, 2007; Wood & Rünger, 2016).

⁷Tone: Tone or value in visual art indicate the lightness. It is indicated in gray scale (black and white). It is one of the 3 most common attributes of a color, namely value, hue and chroma.

Therefore, in order to discover a new solution or to be innovative, a structured framework may serve as a good guide. It indicates that a new variable introduced is a true change. This cannot be done by a random choice. It has to be structured so that the artist knows that he or she has intentionally imposed a change. Therefore, the outcome can be studied, analyzed, or correlated to the newly input parameter. This is so similar to an engineering experiment. Moreover, an applied artist has a commercial requirement that a fine artist may not need to worry about. For a fine artist, one may just produce a result for only one occasion. Even if the outcome is accidental, it is acceptable. However, for an applied artist, the successful work process has to be documented so that in the future others can adopt the same method for a similar result. This improves the efficiency of a commercial art operation and minimizes the waste of resources in the business.

Figure 3. Using the Fishbone Diagram for the Value Design of the Weather and Mood of an Image



Source: Adopted from the fishbone diagrams in inquiry-based teaching and learning for engineering education. International Conference on Information and Management Engineering, Berlin, Heidelberg (Guo & Lu, 2011; Ishikawa, 1990).

I use Figure 3 to demonstrate how to ‘engineer’ values to create the required weather or mood for an image. The causes (5M1E) in Figure 2, can be converted in parallel to visual art parameters to generate the required mood or weather. For the construction of the weather of an image, the fishbone can serve as a deconstruction tool to understand the factors that need to be adjusted to compose the weather. The four most relevant inputs are identified, namely the time of the day, light sources, the space, and the range of values that are related to the weather. Below is the further deconstruction process of each factor that will help students understand the importance of each factor though some may be interdependent.

The time of the day will suggest the major types of values to be applied. The space or environment will determine how the light will behave. Will it be blocked or reflected? For example, during a rainy day, the main portion of the light comes from

the sky while the rest is blocked by buildings. The wet floor will reflect some light. The type of light source is another influential factor. Natural sunlight is coming in a parallel direction, while artificial lighting will radiate and reduce in strength based on a spherical model across the space. The last factor, the range of values is an interdependent factor to the time of the day and types of light sources. For example, if we design a night scene, dark values will dominate, while the light sources are artificial and will graduate in a spherical manner (Ng, 2020). With this process, a complex art-making issue can be deconstructed and resolved modularly just like an engineering problem. Five students who had experienced this problem-solving approach were interviewed and their responses were discussed in the next few paragraphs.

Art Students' Feedback

Five art students who participated in art training classes (drawing or painting classes) that had adopted this engineering approach were interviewed. These 5 students are identified as ST1 to ST5. They also experienced other art training methods before participating in this type of art training.

The Mainstream Art Training and Issues

The invited students' feedback indicated that there were two mainstreams of art critique and instruction. ST1 (personal communication, July 11, 2020) and ST2 (personal communication, July 11, 2020) shared their experiences. The first type of training is a common 'fine art' based training. Normally, students are given choices based on their interests and ideas. It encourages exploration. Students benefit from the process of trial and error. However, ST1 felt that this approach was not effective in cultivating technical skills. During the critique, the instructor provides subjective opinions based on his/her experience, personal feelings or emotional response. The advantage is that the critique may open many possibilities. It allows students to bring in solutions from any professional area without much restriction. It shows the flexibility of how a fine artist is able to borrow knowledge from any area and reinvent it as a fine art output. However, entry-level students without a wide range of knowledge and experience may feel aimless. Moreover, students will have a tough time learning why or how the instructor has arrived at his/her critique. Therefore, it is harder for students to transfer that knowledge to future applications.

A second type is a prescribed approach. The instructor provides procedural steps for students to arrive at a predefined outcome. While it is efficient in transferring skills, it restricts explorations. For a drawing class, a student ST4 (personal communication, July 3, 2020) reflected that one instructor favored only the Disney/ Pixar drawing style in animation. Exploration of other approaches was not encouraged. Another student ST5 (personal communication, Dec 24, 2020) also agreed that this approach would blindside students and make them think those taught models were absolutes in art. While this is a problem, ST2 also found the benefit of this restricted approach. She realized that this approach

was highly effective in transferring the instructor's skills to students and that the instructor could provide very constructive feedback to students. She also felt that entry-level students might need to build up more practical muscles before they were allowed to freely explore any area.

ST1 also reflected that due to the procedural approach, the class was very structured and it, therefore, felt more cohesive. Work was allocated in chronological order and the difficulty level built up progressively. According to ST1, the students who would benefit most from this approach were those who practiced a lot. ST5 also pointed out the benefit of being able to see the instructor's demonstration as well as the instructor's immediate guidance during the studio art classes. He further pointed out the weakness. Students, therefore, have very few chances to explore ideas or methods outside the defined scope as they have to focus on achieving a confined objective set by the instructor.

Students further responded about the differences in the engineering problem-solving approach as compared to the two mainstream art training approaches discussed above.

Art Students' Experience with Engineering Problem-Solving Approach

Students' feedback also resonates with my experience discussed in the literature review. ST1 realized that she could identify the root causes. Therefore, it enabled her to solve complicated art-making problems after combining all the modularly identified causes. The clarity of this problem-solving process also made her feel that her art-making process was more satisfying as she was able to apply all her acquired concepts with confidence. Similarly, ST2 also appreciated that the complex and intuitive art-making process could be fragmented modularly with the engineering problem-solving structure. In general, she did not anticipate that the art-making process could be taught in such a structured manner and could resolve issues with clarity. She responded positively by saying *'It was eye-opening that the mystery and "magic" behind drawing and painting could be explained using math and science... Magic is magic when it can't be explained. The formal language used in image making could be explained and be learned by every student.'*

ST3 (personal communication, July 2, 2020) also resonated with ST2's response by mentioning that this structured process had helped him realize that art and technology were not completely different. He further suggested that this learning concept should be reinforced for art students. He appreciated scientific reasoning in resolving art issues. That aligns with the first advantage that the causes of an issue can be seen clearly. The causes of the issue are also identified objectively. ST4 further mentioned that it had helped her break down complex issues. She used her learning of figurative drawing as an example. This process helped her simplify the drawing of form and she was then able to reconstruct more complex forms. She commented that the engineering mindset had provided her with a tool to isolate factors. That helped her understand how an issue was connected to each input variable. In this case, the input is well isolated. It provides a better output signal. That also helps in determining the effectiveness

of each change introduced.

She further responded that this process had helped her depart from prescribed outcomes. This shows that the problem-solving process instills creativity and helps a student uncover his/her capacity. ST5 also responded similarly by saying that the understanding of the science behind the art-making process had enabled him to discover art in greater depth.

Issues and Possible Improvements Using Engineering Problem-Solving Approach for Art Training

ST1 responded that this engineering approach was unorthodox to art students because her common experience was that art students would work more with personal instinct while this approach removed their instinct. Engineering problem-solving requires users to work with reasoning and logic related to an issue raised. Therefore, she responded that students might require more time to gain experience working with this approach. Moreover, she also felt that this scientific approach could be too idealistic. ST2 responded similarly, thinking that it would be difficult for students who did not have sufficient technical art skills to identify the relevant issues. She felt that students required more time to build up their technical art skills. For example, a beginner may need more practice in drawing and painting they have sufficient visualization power to appreciate this problem-solving approach. Otherwise, they may not visualize the importance of each input factor. ST4 also indicated that students who did not practice enough might not appreciate the advantage of this approach. Their response aligns well with how an art student develops his/her visual sensitivity. Some subtle changes like a minor shift in hue or edge softness will require a lot of practice. Technically this engineering approach may require students to drill repeatedly to gain sensitivity to those more subtle input visual factors. ST5 even suggested bringing in real-life issues in the art industry for students to experience the strength of this approach. In addition, as reflected by ST3, some art students might still prefer to work with an intuitive approach instead. However, the advantages of this engineering problem-solving approach are not lost even if it has the abovementioned issues. These issues can be overcome with some effort in the design of exercises. I would argue that as long as the difficulty level of the exercises is managed well, the benefit of this approach will be appreciated.

Conclusions

With this framework, it removes the risk of students following a prescribed approach to arrive at only a predetermined outcome while it does not encourage aimless or random exploration that may waste resources or efforts. It also reduces students repeating a habitual and random response and thinking that it is a creative act. Therefore, it carries the strength of both mainstream art training approaches mentioned above as it is not prescriptive. It allows a certain level of open exploration. However, it also does not suggest openness without constraints. It sets constraints so that students understand that they are exploring every parameter with a thoughtful mind. Therefore, with the help of this structured process, aligning with Epstein, Schmidt, and Warfel's (2008) argument and Guo's (2011) study, it expands students' ability to discover the areas of the unknown (Koripadu & Subbaiah, 2014). The framework further assists students in learning and working with more complex issues when input parameters may sometimes have interdependent behaviors.

Art students gain the ability to construct their learning and develop a robust structure that will match the needs in the applied art industry especially. It reduces the unnecessary stress of working in a high-stress environment where time and resources have to be efficiently utilized to generate business profit. However, more research effort is required to compare the difference between this engineering approach against the intuitive art approach to understand their strength and weaknesses so that when this engineering approach is introduced to art students, it does not reduce the intuitive talent of art students.

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Teacher Performance and Professional Development as Predictors of School Effectiveness

By Mustafa Özgenel, Ersin Yağan[†] & Fatih Baydar[◦]*

With the rapid changes in information societies and the mission of raising individuals who will adapt to this change, the concept of school effectiveness has come to the fore recently. This study aims to examine the extent to which the performance and professional development of teachers, who play the most important role in achieving school goals, influence school effectiveness. The predictive survey model, a subtype of the relational survey model, which is one of the quantitative research methods, was used within the scope of the research. The data were collected from 392 teachers working in public schools in Istanbul. As a result of the research, it was determined that there was a positive and significant relationship between teachers' perceptions of school effectiveness and their performance and professional development. The professional development of teachers positively affects their performance and school effectiveness. For this reason, policymakers need to carry out studies on the professional development of teachers in a much more comprehensive and planned manner to increase the effectiveness of schools. It should also be considered that the effect of in-service training should be measured with concrete measurement tools.

Keywords: professional development, performance, school effectiveness, effective school

Introduction

Education is the main determinant of development (Tam & Cheng, 2007). This mission imposed on education is only possible if schools reach the determined goals. Effective schools are those that achieve the set goals. However, many factors affect the effectiveness of schools. The greatest impact on school effectiveness comes from grade-level factors rather than school-level factors (Jones, Jenkin, & Lord, 2006). The teachers are the most important factor affecting the grade level. In other words, since teachers are the most important factors affecting the quality of education (Hattie 2003; Darling-Hammond, 2006), qualified teachers are needed to increase the quality of education, that is, the effectiveness of schools (Ginott, 1972; [Organisation for Economic Co-operation and Development] OECD, 2005). For example, the role of talented teachers and administrators is highlighted based on the successes of schools that have succeeded in The Programme for International Student Assessment (PISA) (OECD, 2013). For this reason, governments thought that investing in teachers' professional development and performance could ensure school development effectiveness (Atkinson et al., 2009). At the heart of such

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initiatives is the idea that policy investments to improve teachers' professional development and competencies/ qualities directly affect student performance (Darling-Hammond, 2000; Ferguson, 1991) and indirectly improve school effectiveness. In other words, the effectiveness of a school is directly proportional to the effectiveness of its human resources. In this context, it is known that successful schools have high-performing teachers. The high performance of teachers depends on the relationship between their knowledge, skills, and competencies and their motivation to use their potential. High performance of teachers is possible with the continuous improvement of their knowledge, skills, and competencies, that is, with their professional development. In this study, the relationship between teachers' professional development and school effectiveness and performance was tried to be revealed.

Literature Review

School Effectiveness

The concept of effectiveness in organizations dates back almost a century. In the 1930s, Barnard defined effectiveness as the efficiency with which an organization meets the needs of its members and achieves its goals. Achieving a balance between these two concepts within the organization should be among the most fundamental tasks of organizational managers (Barnard, 1938). An effective school is a student-centered, contemporary education and training environment where students are prepared for their future roles and can achieve higher levels of success than expected in terms of different background knowledge (Balci, 1995, 2022). It is a structure that embodies a set of actions that will enable students to fulfill themselves (Ada & Akan, 2007), and meets the demands of education and training at the highest level (Baştepe, 2009). In effective schools, an appropriate learning environment is created to support students' intellectual, emotional and social development. Students are encouraged (Özdemir, 2013), realistic and pragmatic goals are created and these goals are easily and accurately communicated to all students (Karsli, 2004). Social inclusion is increased, discrimination is reduced, and essential life and work skills, which are characterized by different definitions, are provided (Grant & Francis, 2016). An effective school can create additional value for its students compared to other schools with the same environment and opportunities.

The basic starting point for effective school research is the research of Coleman et al. (1966) and Jencks (1972). Their research claims that the school has little effect on the student's success and that the most effective is the child's cultural capital brought from their family and environment. Effective school studies, which have accelerated since this date, have shown that schools have a very important effect on children's education while not ignoring non-school factors in student success.

The basis of effective schooling is the assumption that all students can learn and that all teachers can teach. In other words, it is accepted that effective schools will make a difference in students and teachers. Considering the duties that are socially imposed on schools, it can be said that the effectiveness of schools can be

measured by the level of achievement of the expected results (Özgenel, 2020; Yağan, 2020). One of the most important criteria in measuring the effectiveness of schools is the educational achievement levels of their students (Witmer, 2005). Students are enabled to develop emotionally as well as cognitively (Özdemir, 2013).

While effective school research began in the 60s, it is seen that research in Turkey started in the 90s. Balci's (1988) and Şişman's (1996) studies revealing the effectiveness of schools, are pioneering studies on effective schooling in Turkey. Researchers identified the key characteristics of effective schools as; (a) strong leadership, (b) high expectations for students, (c) a safe and orderly school climate, (d) high expectations for teachers, (e) monitoring and evaluation of student progress, (f) effective classroom management, (g) belief in student learning potential, (h) emphasis on the acquisition of basic skills, (i) parental involvement, (j) clarity of a shared vision and mission, (k) maximum use of instructional time, and (l) well-organized educational programs (Chandler, 1984; Edmonds, 1979; Hallinger & Murphy, 1986; Hoffman, 1991; Karip & Koksal, 1996; Mortimore, 1993; Özdemir, 2013; Reynolds, 1995; Scheerens & Creemers, 1989). School effectiveness is how the school can achieve its goals (Balci, 2022; Scheerens, 2013; Şişman, 2011). For this reason, school administrators who hope to get the results they expect in terms of the educational outputs should design their schools by considering these processes to make an effective school (Mujis, 2006).

Professional Development

The rapid development of mass communication opportunities in the current era, which is known as the information age, demonstrates that, as with many other subjects, teachers must maintain their professional competence. For this reason, the institutions primarily responsible for education should not neglect teachers' professional development to achieve their goals. Professional development (PD) is activities in which teachers participate to gain knowledge and skills to improve their classroom practices (Torff, Sessions, & Byrnes, 2005), and the process of improving the skills and abilities of teachers to enable students to reach the desired goals (Hassel, 1999). It is defined as the systematic continuation of reform efforts to increase the capacity of teachers to carry out educational activities at high standards (Smith & O'day, 1990). This lifelong learning process lasts from the start of the teachers' profession to the end (Villegas-Reimers & Reimers, 2000). As seen from the definitions, the keyword for teachers' professional development is the necessity of evaluating teachers as individuals who have adopted the principle of lifelong learning. Through continuous professional development, teachers deepen their field knowledge, become aware of the latest developments in their field, and align their skills with workplace standards (Reese, 2010). Professional development aims to increase teachers' performance, obtain high efficiency from the implemented practices, apply the determined education policies to the field in a healthy way, and easily adapt to all these changes (Blandford, 2000).

Although it does not guarantee the success of the applied professional development programs, certain principles must be followed in order to avoid failure (Guskey, 2007): (i) Change is a process that the individual and the

organization carry out together. There may be situations where the individual demands change, but the organization does not respond to this demand, or the opposite may occur. A healthy change occurs when both elements can respond appropriately to the demands for change. (ii) Sudden and major changes can often result in frustration. For this reason, change should be planned with a gradual and incremental approach for professional development programs to be successful. (iii) A healthy professional development program must be based on teamwork rather than individuality. (iv) Effective measurement methods should be applied at different stages of the implemented program, and healthy feedback should be given to the participants. This measurement process will also provide practitioners with healthy data on the functioning and failing aspects of the program. (v) After the programs are implemented, the participants must be followed up. Only in this way can the efficiency of the program be tested. Professional development for an effective program should be seen as a process, not an event.

The professional needs of teachers also differ at different stages of their careers. Therefore, the concept of professional development is a process that should be programmed to meet the professional needs of teachers that differ in these different career stages. The expectations of the students, who are the primary beneficiaries of educational institutions, are changing rapidly. Therefore, to keep up with this expectation of change, teachers need to improve their field knowledge, master the innovations in teaching techniques, and exchange information with their colleagues to follow good examples. In other words, the need to meet the learning needs of students in a more qualified way constitutes the basic emergence principle of professional development.

Teacher Performance

Teachers, the most important and costly resource of educational organizations, are at the center of school improvement efforts. Increasing the effectiveness of the school can be possible by employing competent people as teachers. These teachers' teaching methods and techniques are of high quality; therefore, all students have access to high-quality education (OECD, 2005). The most important factor in a student's learning is the teacher. Because the 'teacher' is the determining factor in the classroom, the person who creates the climate and has the enormous power to make a child's life miserable and happy (Ginott, 1972). For this reason, determining which factors will be effective in increasing the performance of a teacher who is effective on student outcomes and maintaining his high performance has become an important research topic. Performance management is a strategic and integrated process that helps organizations achieve sustainable success by enhancing the individual performance of the organization's employees and improving both individual and team capabilities (Armstrong, 2000). Evaluating teachers' performance in educational organizations, besides being effective on educational organizations and the quality of teaching, also aims to reveal a perspective on teacher training policies and practices (Carter & Lochte, 2016). The effectiveness of education and the increase in the quality of general education are closely related to the quality of teacher training programs and the fact that teachers have

received pedagogy and field training that focuses on effective practice examples (Darling-Hammond, Wei, & Johnson 2009).

Although national standards for teacher competencies, selection, and training have been set, inadequate performance among teachers poses great challenges for leaders and administrators at all levels of education (Wragg, Haynes, Wragg, & Chamberlain, 2000). Poorly performing teachers fail to meet their performance standards and have an impact on the performance of those with whom they come into contact. Low performance negatively affects students' achievements, other teachers' performance, and school leadership and management. At the same time, poor performance also damages the school reputation and causes parental reactions (Dean, 2002). On the other hand, individual and organizational inadequacies caused by low performance can also create long-term obstacles to the economic development of countries (Hanushek, 2010).

Performance criteria must be clearly defined for performance improvement because performance becomes manageable and measurable only to the extent that it can be defined (Armstrong, 2000). The development process, which starts with a clear definition of performance, needs to produce policies to increase teachers' performance and maintain high-performance levels (Jones, Jenkin, & Lord, 2006). In this way, a continuous increase in the effectiveness of both schools and education can be achieved. Several studies have found that raising achievement significantly impacts the quality of teaching and the quality of student teachers (Barnett, 2008; Hanushek, Kain, & Rivkin, 2004; Rivkin, Hanushek, & Kain, 2005). When the relevant literature is examined, it is seen that factors stemming from teacher qualifications play a direct role in school effectiveness. Many studies examine the dual relationships between teachers' professional development, performance, and school effectiveness and provide evidence for these relationships (Özgenel & Mert, 2019; Wallin, 2003; Yalçın & Özgenel, 2021). According to Özgenel and Mert (2019), teachers' training, seminars and their personal development during the service significantly affect their performance. By maximizing the performance of teachers, there will be an increase in the academic success of students. In this way, there will be an increase in efficiency and effectiveness in schools. According to Wallin (2003), teachers' professional development contributes positively to the development, implementation and review of schools' policies and procedures. By providing professional development, the teacher can establish positive relationships with parents, set standards of professional integrity and personal development, share ideas and materials with professional colleagues, and contribute to the effectiveness of the school program. According to Yalçın and Özgenel (2021), professional development of teachers contributes to changing the perspective of teachers towards their profession. Professional development has an important place in increasing the performance and knowledge of the teacher. Teacher performance is effective on school effectiveness and student academic success. Professional development of teachers should be focused on in order to increase the quality of education. Examining the relationship between these three variables will provide a holistic perspective in determining the factors affecting school effectiveness. This study aimed to determine whether the professional development and performance of teachers, who play the most important role in schools achieving their goals, predict school effectiveness. In addition to this basic question, the research sought answers to the following questions:

Is there a significant relationship between teachers' perceptions of school effectiveness and their performance and professional development?

Does teachers' professional development significantly predict their performance?

Does teachers' professional development significantly predict their school effectiveness?

Do teachers' performances significantly predict school effectiveness?

Do teachers' professional development and performance together significantly predict school effectiveness?

Methodology

Design

Since the study aimed to determine the relationship between teachers' professional development and their performance and school effectiveness; therefore, the quantitative research method and the predictive survey model were used. The study used the predictive survey model, one of the relational survey models, because it aimed to determine whether teachers' professional development and performance predicted school effectiveness. The predictive research model is a research design that aims to "predict future behaviors and determine the variables that predict the outcome" (Creswell, 2017). In other words, it is a research design to determine the independent variables that predict the dependent variables (Özgenel, 2021).

Participants

Since the research was carried out during the COVID-19 pandemic period, the participants were reached in the pandemic with the "Convenience Sampling" method. The main objective of convenience sampling is to collect information from participants who are easily accessible to the researcher (Etikan, Musa, & Alkassim, 2016). 392 teachers working in public schools in Istanbul province participated in the study during the spring semester of the 2020-2021 school year. 241 teachers were female, 151 were male, 307 had undergraduate degrees, and 85 had graduate degrees. The average age is ± 38.9 years, and the average seniority is ± 14.8 years.

With a population of 18 million, Istanbul meets approximately 1/4 of Turkey's population. Again, with 160,000 teachers, one of the seven teachers working throughout the country works in Istanbul (Ministry of National Education [MoNE], 2022). Therefore, considering the diversity of the student and parent profile and the high number of teachers, it is thought that the studies conducted in Istanbul give very suitable data for generalizations.

Measuring Instruments

The Information Form, School Effectiveness Index, Employee Performance Scale, and Teachers' Attitudes towards Professional Development Scale were used as data collection tools in the research. The Information Form contains information about the participants' gender, education level, age, and seniority.

The "School Effectiveness Index (SE-Index)," developed by Mott in 1972, was found to be a valid and reliable measure of effectiveness in hospitals. The Mott scale was first developed and used in schools by Miskel, Fevurly, and Stewart (1979) and subsequently by Hoy and Ferguson (1985), Hoy and Miskel (1996), Hoy, Tarter, and Kottkamp (1991). It was adapted into Turkish by Yıldırım (2015). The Index is an 8-item and 6-point Likert-type scale that measures the degree of perceptions of a school's overall effectiveness through a subjective assessment. The higher the score, the more effective the school is (Hoy, 2021).

Torff, Sessions, and Byrnes, (2005) developed the *Teachers' Attitudes about Professional Development* (TAPD) Scale to assess teachers' attitudes towards professional development activities/initiatives. The original scale was 9 items and was graded on a 5-point Likert scale (disagree-1, partially agree-2, moderately agree-3, mostly agree-4, completely agree-5). The scale was adapted into Turkish by Özer and Beycioğlu (2010). In the adaptation study, 3 items were removed from the scale, resulting in a single factor 6-item structure.

The *Performance Scale (PS)* was adapted into Turkish by Erdogan (2011), using the scales of Kirkman and Rosen (1999), Fuentes, Albacete-Sáez, and Lloréns-Montes (2004), and Rahman and Bullock (2005). The scale is a single factor, 7-item scale and a 5-point Likert type scale A minimum of 7 points and a maximum of 35 points are taken from the scale. A high score indicates high performance.

Permission was obtained from the researchers who developed the scales. In addition, research permission was received from Istanbul Sabahattin Zaim University Ethics Committee (dated 27.11.2020 and numbered 2020/11).

Data Analysis

Before analyzing the data, we checked whether the scale met the assumptions of normality.

Table 1. Kurtosis, Skewness, and Reliability Values of the Scales

	Skewness	Kurtosis	Cronbach's Alpha
School effectiveness	-.782	.977	.886
Performance	.044	-.457	.704
Professional development	-.773	.229	.823

According to Table 1 above, since the skewness (-.782, .044, -.773) and kurtosis (.977, -.457, .299) values of the scale are within the limits of ± 1 , it shows a normal distribution. The reliability coefficients of .70 and above is found to be reliable.

Correlation and regression analyses were performed in the analysis of the data. Cohen's (2013) f^2 criterion was used to calculate the effect size of the multiple regression analysis. The formula $f^2=R^2/(1-R^2)$ is used to calculate the f^2 value. The results obtained from the effect size were evaluated as ".02 \leq f 2 < .13 low impact; .13 \leq f 2 < .26 medium impact; .26 \leq f 2 large impact" (Cohen, 2013).

Results

The Pearson correlation (PPMC) values to determine the relationships between the variables are given in Table 2.

Table 2. Relationships between Variables

	Mean	sd	1	2	3
1-School effectiveness	4.480	.785	1		
2-Performance	4.095	.444	.295**	1	
3-Professional development	4.011	.729	.292**	.355**	1

N=392; **p<.01

According to Table 2, there is a positive and significant relationship between teachers' perceptions of school effectiveness and their performance ($R=.295$; $p<.01$) and professional development ($R=.292$; $p<.01$). Again, a positive relationship was found between teachers' professional development and their performance ($R=.355$; $p<.01$).

The results of the simple regression analysis regarding the professional development of teachers to predict their performance are given in Table 3 below.

Table 3. The Level of Predictive Performance of Professional Development

Independent Variable	Dependent Variable	B	Std. Error	(β)	t	p
Constant	Performance	3.228	.118		27.436	.000
Professional development		.216	.029	.355	7.498	.000

N=392; R=.355; $R^2=.126$; F=56.215; p<.000

According to Table 3, it is seen that teachers' professional development significantly predicts their performance ($p<.01$). Teachers' professional development explains 12.6% of the total variance in their performance ($R=.355$; $R^2=.126$; $F=56.215$; $p<.000$). According to the B coefficient, a one-unit increase in teachers' professional development provides a .216-unit increase in their performance. The performance average of a teacher who does not show any professional development will be 3.228. In other words, the professional development of teachers affects their performance positively. As the professional development of teachers increases, their performance also increases.

The results of the simple regression analysis regarding the prediction of school effectiveness by teachers' professional development are given in Table 4.

Table 4. The Level of Professional Development Predicting School Effectiveness

Independent Variable	Dependent Variable	B	Std. Error	(β)	t	p
Constant	School effectiveness	3.220	.212		15.158	.000
Professional development		.314	.052	.292	6.027	.000

N=392; R=.292; $R^2=.085$; F=36.328; p<.000

According to Table 4, it is seen that teachers' professional development significantly predicts school effectiveness ($p < .01$). Teachers' professional development explains 8.5% of the total variance in school effectiveness ($R = .292$; $R^2 = .085$; $F = 36.328$; $p < .000$). According to the B coefficient, a one-unit increase in teachers' professional development provides a .314-unit increase in school effectiveness. The average school effectiveness of a teacher who has never made professional development will be 3,220. In other words, the professional development of teachers positively affects school effectiveness. As teachers' professional development increases, school effectiveness also increases.

The results of the simple regression analysis regarding the prediction of school effectiveness by teachers' performances are given in Table 5.

Table 5. The Level Performance Predicting School Effectiveness

Independent Variable	Dependent Variable	B	Std. Error	(β)	t	p
Constant		2,48	.352		6.673	.000
Performance	School effectiveness	.521	.085	.295	6.096	.000

N=392; R=.295; R²=.087; F=37.166; p<.000

According to Table 5, it is seen that teachers' performances significantly predict school effectiveness ($p < .01$). Teachers' performances explain 8.7% of the total variance in school effectiveness ($R = .295$; $R^2 = .087$; $F = 37.166$; $p < .000$). According to the B coefficient, a one unit increase in teacher performance leads to a 0.521 unit increase in school effectiveness. The average school effectiveness of a teacher who has never performed is 2,348. In other words, teacher performance has a positive effect on school effectiveness. As teachers' performance increases, school effectiveness also increases.

The results of the multiple regression analysis related to predicting school effectiveness and teacher professional development and performance are presented in Table 6.

Table 6. The Level of Predicting School Effectiveness Together with Professional Development and Performance

Independent Variable	Dependent Variable	B	Std. Error	(β)	t	p
Constant		1.973	.356		5.547	.000
Professional development	School effectiveness	.230	.055	.214	4.227	.000
Performance		.386	.089	.219	4.321	.000

N=392; R=.357; R²=.127; F=28.322; p<.000

Table 6 shows that teachers' professional development and performance together significantly predict school effectiveness ($p < .01$). Teachers' professional development and performance together explain 12.7% of the total variance in school effectiveness ($R = .357$; $R^2 = .127$; $F = 28.322$; $p < .000$). According to the β coefficient, a one-unit increase in teachers' professional development causes an increase of .230 units in school effectiveness; a one-unit increase in their performance provides a .386-unit increase in school effectiveness. The average school effectiveness for a teacher who does not do

any professional development or work would be 1,973. In other words, teachers' professional development and performance together positively affect school effectiveness. As teachers' professional development and performance increase, school effectiveness also increases.

The f^2 value was calculated to determine the effect size on school effectiveness, together with teachers' professional development and performance [$(f^2=R^2/(1-R^2))$]. In the current study, together with teachers' professional development and performance, the effect size on school effectiveness $f^2=.127/(1-.127)=.145$. This effect size was found to be moderate.

Discussion

The current research focuses on the relationship between teachers' professional development and performance and school effectiveness, using a dataset of 392 teachers working in public schools in Turkey (Istanbul). Our data confirm that there is a significant positive correlation between school effectiveness and teachers' performance and professional development. The findings show that as teachers' attitudes towards professional development increase, they are more likely to improve their performance and school effectiveness in a positive way. Attitude is an individual's evaluation of an object (Petty, Fabrigar, & Wegener, 2003) and is one of the affective characteristics that directs the individual to a certain behavior (Marshall, 1999; Plotnik, 2009). Therefore, as teachers' attitudes towards professional development increase positively, their performance and school effectiveness also increase. As a matter of fact, teachers' professional development and performance together have a medium effect size on school effectiveness. These findings indicate that "following professional and educational publications, the internet and social media, consulting colleagues, participating in in-service training courses and training, pursuing postgraduate education, attending congresses and symposia, watching educational films, and conducting research for the professional development of teachers (Özgenel, 2019)" are effective initiatives. In short, the greater their participation in professional development activities, the greater their performance improvement and contribution to school effectiveness." In addition, it has been revealed that high-performing teachers improve their classroom education practices and thus contribute to school effectiveness. These findings show that when teachers are engaged in activities that promote their professional development, they increase their performance (Ferguson & Womack, 1993; Lopez-Acevedo, 2004; Padillo, Manguilimotan, Capuno, & Espina, 2021; Yalçın & Özgenel, 2021) and increase the academic achievement of students (Cohen & Hill, 1997; Ferguson, 1991), also presents consistent results with the existing empirical findings and theoretical knowledge in the literature that higher teacher performance improves school effectiveness (Özgenel & Mert, 2019; Polat, 2022). Professional development activities aimed at improving teachers' knowledge, skills, and competencies improve their performance and possibly increase the quality of classroom practices and indirectly contribute to school effectiveness.

While teachers' professional development, namely their knowledge, skills, and competencies, has the most critical role in making education qualified, a functional performance evaluation program is needed to secure a qualified education-learning process (Hajar & Mukheri, 2017). Therefore, it is necessary to support the professional development of teachers (Wragg, Haynes, Wragg, & Chamberlain, 2000) and to build functional performance evaluation systems in schools. For this purpose, organizations make large-scale investments to create a functional performance evaluation system (Hallinger, Heck, & Murphy, 2014) and to strengthen their organizational structures (Yıldız & Baydar, 2022). However, it should not be forgotten that performance is a multidimensional and multidisciplinary field, contains prejudices, does not depend on a single view, and uses different models (Holton, 1999). In addition, school administrators should create a positive school climate (McBer, 2000; Özgenel, 2020) and a strong school culture that supports continuous development and improvement in the name of teachers' professional development and performance and school effectiveness.

It is argued that the effectiveness of schools is related to learning outcomes (Atkinson et al., 2009; Hallinger, Heck, & Murphy, 2014; Liu & Zhao 2013) and increase the quality of education (Hanushek, 2010). Given all this evidence, policymakers should prioritize teacher professional development for school effectiveness. Planning and organizing teacher professional development activities in schools will improve teacher performance by increasing their self-esteem, and this improvement will contribute to school effectiveness (Basaran & Cinkir, 2013). In addition, since improving teacher quality increases student achievement (Darling-Hammond, 2000), teachers should be provided with meaningful professional development opportunities. For this reason, policy makers should shape the pre-service and in-service trainings they plan for teachers according to the skills that children will need in the future, the age requirements, and the teachers' interests and abilities.

Conclusion

To increase school effectiveness, classroom-level factors should be taken into account. In particular, teachers are an important factor in increasing the quality of activities implemented at the classroom level for students' learning and development. It can be said that the continuous professional development of teachers and increasing their qualifications will directly affect student performance. On the other hand, it is seen that teacher performance plays an important role in the success of schools in internationally valid exams such as PISA and TIMSS.

Strong leadership of teachers in schools is important for the effectiveness of schools. On the other hand, it is necessary to ensure that schools have a safe and orderly culture and to meet students' expectations from teachers, to monitor and evaluate students' development, to ensure that teachers demonstrate effective classroom management skills, to ensure that teachers have confidence in students, and to determine which skills should be given to students by the teacher. In addition, teacher quality and performance are effective in teachers' effective communication with the environment and stakeholders' ownership of the school vision. For students to acquire the desired knowledge and skills and for schools to achieve their goals, teachers must ensure

that the progress in their professional knowledge and skills is sustained throughout life. Otherwise, student success, school leadership and management processes are negatively affected. Poor performance also damages the professional reputation of the school and teachers. Learning losses and inadequacies resulting from low performance in the long term can create serious obstacles to the development of countries.

In this study, which was conducted to determine the relationship pattern between teachers' professional development, performance and school effectiveness, it was determined that there was a positive and significant relationship between teachers' perceptions and performances of school effectiveness and their professional development. In addition, teachers' professional development significantly affects their performance and school effectiveness. Teacher performance significantly affects school effectiveness. On the other hand, it has been understood that teachers' professional development and performance together significantly affect school effectiveness. In other words, as teachers' professional development and performance increase, school effectiveness also increases. Teachers' motivation to demonstrate their knowledge, skills and competencies and to reveal their potential is closely related to the continuity of their professional development. Although it is understood that professional development has a critical role in the quality of education, it is necessary to implement a functional performance evaluation program for the education process to be effective. To ensure continuous professional development of teachers, it is also necessary to take comprehensive large-scale measures that will increase supportive school culture, teacher self-confidence, respect and motivation, along with the introduction of an effective performance evaluation system.

Limitations

After discussing the main findings of the study, it is important to state a few limitations regarding data collection tools and measurements to understand the findings of the current study. First, all the scales used in the research were filled in by the teachers. As teachers tend to agree with the positive statements in the scale items, this may raise concerns regarding social desirability and acceptance. Although social desirability is likely to result in higher mean scores on general scales, it has little impact on the correlational relationships across variables (as cited in Luyten & Bazo, 2019, Bellibaş, Polatcan, & Kılınç, 2022). Finally, while this study provides important findings about the relationship between teachers' professional development and their performance and school effectiveness, it does not imply causality because the data was collected cross-sectionally. As a result, information about causality between variables can be obtained using different methods.

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If You Can't Beat It, Join It! Teaching and Learning Mathematics with ChatGPT and Key Prompts to Stimulate Self-Learning

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In this study, we examine mathematics students' use of ChatGPT and address issues related to AI-generated errors and editing of prompts containing formulas. We're introducing Chat-MatTM, an integrated suite of tools designed to enhance the learning experience. This set of tools includes a math Prompts Editor, an Algebraic Calculator, a Graph Plotter, and sets of themed Key Prompts. Our approach allows students to effectively communicate with ChatGPT, check its answers, and use advanced mathematical tools for deeper exploration. By providing detailed instructions for quick editing and selecting Key Prompts, we support a variety of learning objectives, including problem solving, understanding mathematical concepts, and engagement with the broader historical and practical context of mathematics. By providing students with suggested prompts, we develop the ability to construct their own questions while also enriching their learning experience with additional contextual information. To assess the impact of Chat-MatTM on learning outcomes, we conducted a survey among students. The results indicate a positive correlation between the use of our artificial intelligence tools and student exam performance, suggesting that Chat-MatTM significantly improves the effectiveness of self-paced math learning.

Keywords: ChatGPT, prompts, mathematics, self-learning, algebraic calculator

Introduction

Artificial intelligence programs such as ChatGPT, Co-Pilot, Bard, Claude and others allow you to answer math questions in general, as well as solve equations and perform algebraic operations in particular. Students use this ability to solve problems assigned for homework, assignments, etc. However, these attempts face two technical problems in writing prompts that involve mathematical expressions. The first problem is writing expressions in LaTeX format, which is unfamiliar to most users (students). In addition, the result appears as long and complex lines of text that are difficult to edit even for those who know the syntax.

The second issue currently being discussed in the scientific and pedagogical discourse on the use of ChatGPT in teaching and learning mathematics is the frequent errors in calculations (Remoto, 2024).

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Both problems limit the use of these programs by mathematics (and physics) students. In addition, the illiterate use of incorrect solutions can cause confusion among students and conflicts between them and exercise examiners.

Another conceptual issue that has been present in the discourse of mathematics education in recent decades is: whether students are allowed/encouraged to use automatic calculation tools (calculator, computer software) to solve homework problems?

After unsuccessful attempts to ban the use of various computing tools, the consensus among many involved in mathematics education today is that if banning them is not possible, it is advisable to make use of the effort and time students spend using these tools and transform so-called “forbidden” activities into opportunities that deepen and diversify learning, enhancing students' curiosity and critical thinking.

The new additions to the Halomda learning and e-assessment system are a set of tools that provide answers to all of the above questions:

1. Quick access to ChatGPT;
2. Technical solution for inserting mathematical expressions into prompts;
3. Checking and exploring the responses received from the bot;
4. Help in compiling prompts and lists of recommended prompts for the subjects being studied.

The above-mentioned set of tools, known as Chat-Mat, enables effective use of AI tools in learning mathematics, encourages students to explore mathematical problems in more depth, and complements the course content by introducing various key issues.

The research questions we posed in this work can be summarized as follows:

Q1: To what extent did the use of the Halomda platform's Learn, Train and Test modes enhance student learning outcomes?

Q2: To what extent can the use of ChatGPT stimulate students' interest and desire for self-learning?

Q3: To what extent can the use of the AI toolkit integrated into the Halomda platform improve student learning performance?

Literature Review

On the one hand, the integration of technology into the educational process is not a new idea and has always been a topic of discussion. Moreover, it is an accreditation requirement for most teacher preparation programs (Meisner & McKenzie, 2023). According to the constructivist teaching and learning paradigm, active student participation is desirable because knowledge acquired through active learning methods “tends to be of higher quality, characterized by understanding, applicability, and persistence” (Bardorfer, 2024). In addition, performance-based learning “helps students understand their strengths so they can improve and identify weaknesses that need improvement” (Tashtush, Shirawia, & Rasheed, 2025). On the other hand, the education sector is undergoing significant changes due to rapid technological

advancement. These changes affect various aspects of education, requiring teachers to adapt and integrate new developments into their teaching practice. A revolutionary technology innovation that is gaining global attention is artificial intelligence (AI) systems such as ChatGPT.

Since the public launch of ChatGPT in October 2022, numerous papers have been published on the potential applications and initial results of AI bots in education in general (Alali & Wardat, 2024), and mathematics education in particular (Wardat, Tashtoush, Alali, & Jarrah, 2023). Topics related to mathematics include various issues such as the computing capabilities of various bots (Green, 2024; Botana & Recio, 2024; Rane, 2023), research writing (Bringula, 2023), mathematical research (King, 2023), plagiarism detection (Eager & Brunton, 2023), and related fields such as physics (Liang, Zou, Xie, & Wang, 2023).

Recent studies have examined the impact of ChatGPT on students' learning motivation and interest. Research shows that incorporating ChatGPT into teaching can increase students' interest in learning by providing varied and targeted learning modes, improving knowledge acquisition, and promoting independent learning (Hui, Qian, & Zheng, 2023). ChatGPT-generated dialogues in language learning materials have been shown to significantly improve student motivation, especially in the areas of self-regulation, intrinsic values, and test anxiety (Aydim Yıldız, 2023); improve understanding and academic performance (Afkarin & Candra, 2024). Supporting students' autonomy, competence, and relatedness can improve their learning motivation and performance, as well as enhance their interest and academic performance (Zhou & Li, 2023). These results provide valuable information for educational reforms and new pedagogical approaches in the era of artificial intelligence.

Given that our research focuses on the use of ChatGPT by mathematics students, we focused on reviewing relevant papers on this topic here. The challenges associated with the use of ChatGPT by mathematics students are both technical and didactic in nature. One technical issue discussed in Remoto (2024), involves inserting math formulas into prompts: "In math, you'll come across a lot of math symbols that you can't type into ChatGPT. This is its limitation, since it is not designed specifically for mathematics".

While most of the published papers describe and discuss the rapidly growing ability of AI bots to correctly solve math problems in various areas of mathematics, some also delve into the potential benefits of AI tools for students. For example, in Güler, Yıldız, Boran, and Dertli (2024) are offered recommendations for future research on integrating ChatGPT into mathematics education contexts: "ChatGPT provides a useful tool for students who may be hesitant to ask questions in class, allowing them to find answers to their questions or submit queries without hesitation; it serves as a valuable tool for students to explore concept definitions using ChatGPT while preparing for lessons." In addition, the authors believe that "students can get instant feedback by checking the solutions to basic-level questions using ChatGPT," and with effective ChatGPT, they "can directly access answers to basic-level questions covering basic concepts and operations."

Various aspects of the didactic benefits and potential applications of ChatGPT in student learning are discussed in Nitin (2023), where the author states that "ChatGPT and similar LLMs can serve as interactive tutors, guiding students through complex

problem-solving processes by providing step-by-step explanations, generating real-time examples, and offering tailored feedback". However, it is important to note that "balancing the use of LLMs as educational aids while encouraging independent thinking is a delicate challenge that educators must facilitate interactive learning enabling it to "act as a personalized tutor", since it "caters to individual learning styles", all of which "leads to a deeper understanding".

It should be considered that despite the benefits associated with the education revolution, the integration of AI models into classroom work may have serious ethical implications, such as dependence on AI and reduction of human interaction, authenticity and originality of student work, privacy and data security, and the presence of unconscious bias in AI-generated content (El-Seoud, Shehab, Nagaty, & Karam, 2023). If data is biased, AI models reinforce that bias, thereby "exacerbating existing discrimination in education systems" (Verma, 2019). Additionally, the lack of accountability and transparency when using AI models in the classroom raises various questions, such as who is responsible for the accuracy of educational decisions made by AI models and how these decisions are made (Tang & Su, 2024). Naidu and Sevnarayan (2023) are concerned about a potential crisis of academic integrity due to the use of ChatGPT for online assessment in distance education. In conclusion, ChatGPT helps the learning process by helping students understand proofs, theorems, and mathematical reasoning. However, educators should be aware of potential ethical issues.

General Structure of the Halomda Train and Assessment Platform

The system of teaching and e-assessment in mathematics and physics was first announced in 2001 (Kornstein, 2001). The system is based on web technologies and is supported by both its own LMS and Moodle. It presents 3 main modes of operation - Learn, Train and Test (Figure. 1).

Figure 1. Modes of Operation



The system includes a graphical mathematical expression editor that allows users to write intuitively without the need for special syntax. It is supported by special Computer Algebra (CA) software designed to evaluate the answers and compare them with the correct ones. The platform also includes research tools— software for building and exploring graphs of functions and an Algebraic Calculator that performs symbolic operations in 10 areas, including basic algebra, equations, trigonometry, calculus, linear algebra, statistics.

The graphical task editor does not require knowledge of any programming language; with its help, about 5,000 exercises in mathematics and physics have been developed for primary, middle and high school students, as well as university students.

The course provides students with a comprehensive set of basic problems covering the curriculum. Typically, this set includes from 50 to 150 tasks grouped into weekly tasks (Slobodsky & Durcheva, 2023).

The Learn and Train modes present students with a series of tasks, each with random parameters to ensure that different trials produce different sets of exercises. Students have the opportunity to ask help, which is provided at three levels: general help, which describes a solution method, common to all problems in a particular subject; a list of steps to solve the problem with a description of each step; and the final result of all solution steps.

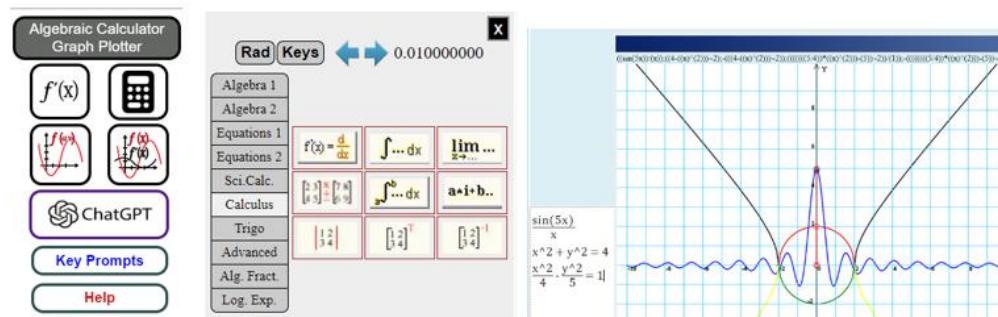
In Test mode, students are presented with multiple answer options without assistance and are required to complete a series of tasks that simulate the conditions of a classroom test.

This unique yet simple structure provides feedback and control throughout the learning process.

Combination of ChatGPT and Math Software in the Chat-MatTM Communication Toolkit

The latest version of the Halomda platform includes access to ChatGPT, as part of the Chat-Mat package. Integrated programs: ChatGPT and recommended prompts (Key Prompts), Graph-Man (a software for constructing and analyzing graphs), and Algebraic Calculator (solves equations and performs symbolic operations in 10 areas of mathematics) (Figure 2).

Figure 2. Chat-Mat kit, Algebraic Calculator, Graph-Man



In addition to the ChatGPT integration, Halomda has developed a graphical editor for mathematical expressions and their representation in the LaTeX format required by ChatGPT.

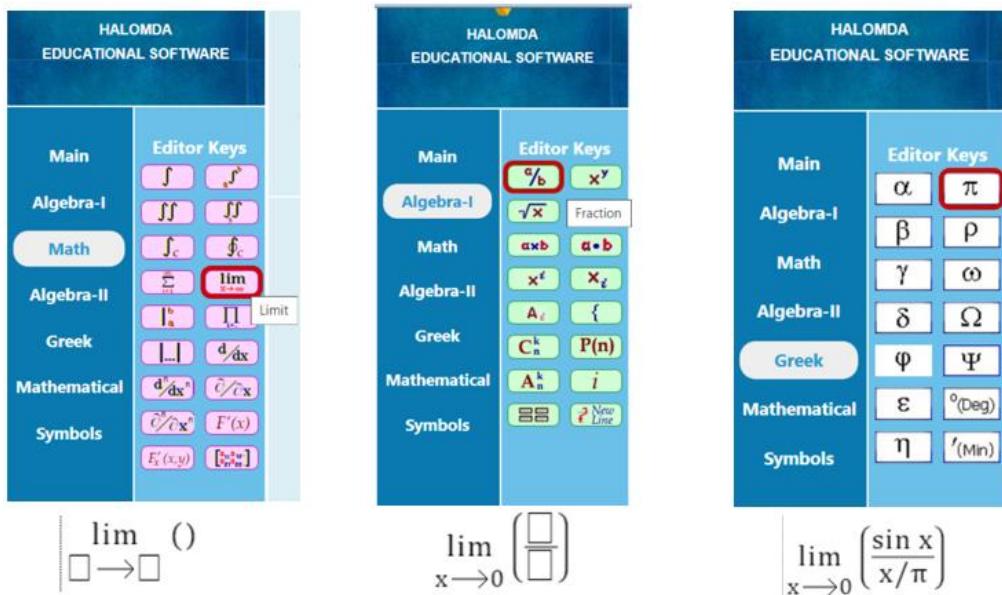
For example, to submit a prompt that includes limit calculation:

$$\lim_{x \rightarrow 0} \left(\frac{\sin x}{x/\pi} \right)$$

one should type: \lim_{x \rightarrow 0} \left(\frac{\sin x}{x/\pi} \right)

The graphic editor allows you to enter a limit using the appropriate templates (Figure 3). Subsequently, to create a prompt that includes text and a math expression, users can simply copy and paste it into the ChatGPT message window.

Figure 3. Math Templates



This feature allows students to chat with the bot about math topics. The main didactic issues mentioned in the research regarding the use of ChatGPT in mathematics education (Wardat, Tashtoush, Alali & Jarrah, 2023; Zhao, Shen, & Qi, 2023; Nitin, 2023) are as follows:

- How to solve the problem of incorrect responses received from ChatGPT?
- How should students use ChatGPT as a reliable guide beyond direct problem solving, given the frequent incorrect solutions?

The Chat-Mat kit, integrated into the Halomda learning system, is based on the following educational concept: a student's knowledge in any mathematical subject is closely related to the time spent studying the subject and the variety of different approaches that he has mastered. The more diverse activities students engage in, the greater the expected success! The following scenario describes what students do when solving problems:

- contacting ChatGPT with a request to solve the problem.

The way to communicate with ChatGPT is through the prompt. The learning environment allows students to create a prompt that includes math expressions and send it to a smart bot. For example, using the formula editor, a student writes the following question, consisting of two sections:

Find the domain of the function:

$f(x)=3\log_2\{(x+4)\}-1+\log_2\{(x-2)\}$
and solve the equation: $3\log_2\{(x+4)\}=1-\log_2\{(x-2)\}$

ChatGPT correctly solves the first section, including the verbal explanation (Figure 4), but could not solve the equation (giving wrong reasons and miscalculated) (Figures 5-6).

Figure 4. A Typical Prompt and a Correct Answer from the Bot

You

Find the domain of the function $f(x) = 3\log_2(x+4) - 1 + \log_2(x-2)$

ChatGPT

To find the domain of the function $f(x) = 3\log_2(x+4) - 1 + \log_2(x-2)$, we need to identify the values of x for which the function is defined. Remember that the logarithmic function is defined only for positive real numbers inside the logarithm. Additionally, we must consider any denominators or other restrictions imposed by the expression.

1. For $3\log_2(x+4)$, the argument $x+4$ must be positive.
2. For $\log_2(x-2)$, the argument $x-2$ must be positive.
3. The expression inside each logarithm must not equal zero, since logarithms of zero are undefined.
4. The base of the logarithm, 2, is always positive.

Let's consider each condition:

1. $x+4 > 0$ implies $x > -4$.
2. $x-2 > 0$ implies $x > 2$.
3. $x+4 \neq 0$ and $x-2 \neq 0$ implies $x \neq -4$ and $x \neq 2$.

Now, let's find the intersection of these conditions to determine the domain of the function: The function is defined for $x > -4$ and $x > 2$. However, since we need both conditions to be true, we take the intersection of these intervals. The smaller interval is $x > 2$.

So, the domain of the function is $x \in (2, \infty)$.

Figure 5. Section 2 of the Prompt, an Error During the Solution

 **You**
solve equation: $3\log_2(x+4) = 1 - \log_2(x-2)$

 **ChatGPT**
To solve the equation $3 \log_2 (x + 4) = 1 - \log_2 (x - 2)$, let's follow these steps:
 1. Apply logarithmic properties to condense the equation.
 2. Solve for x algebraically.
 Let's start:
 Step 1: Apply the logarithmic properties.
 Use the logarithmic property: $n \log_b (x) = \log_b (x^n)$.
 So, the equation becomes:

$$\log_2 (x + 4)^3 = \log_2 \frac{1}{(x-2)} ?$$

Step 2: Remove the logarithm by equating the expressions inside the logarithms:

$$(x + 4)^3 = \frac{1}{x-2}$$

$$(x + 4)^3 = \frac{1}{x-2} ?$$

$$(x^2 + 8x + 16)(x + 4) = 1$$

.....

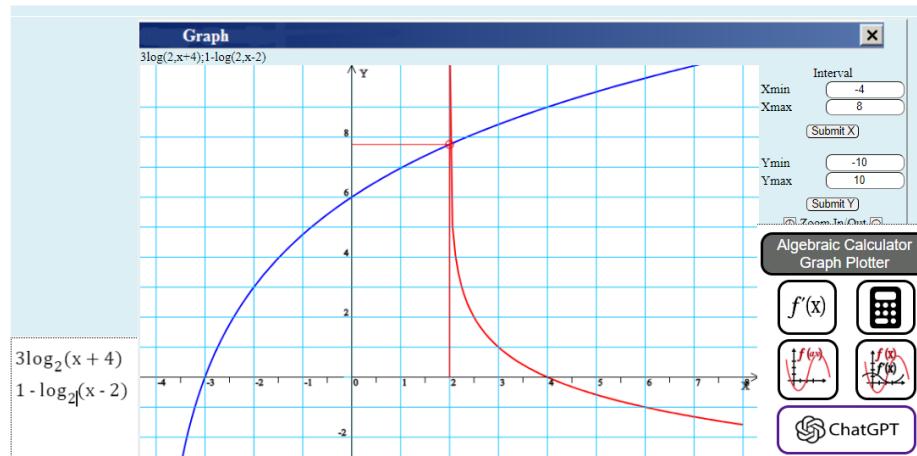
$$x^3 + 12x^2 + 48x + 63 = 0 ?$$

Now, this is a cubic equation. While there isn't a general form for quadratics, we can still find solutions using numerical methods. In this case, we can see that $x = -3$ is a solution.

Therefore, the solution to the equation is $x = -3$.

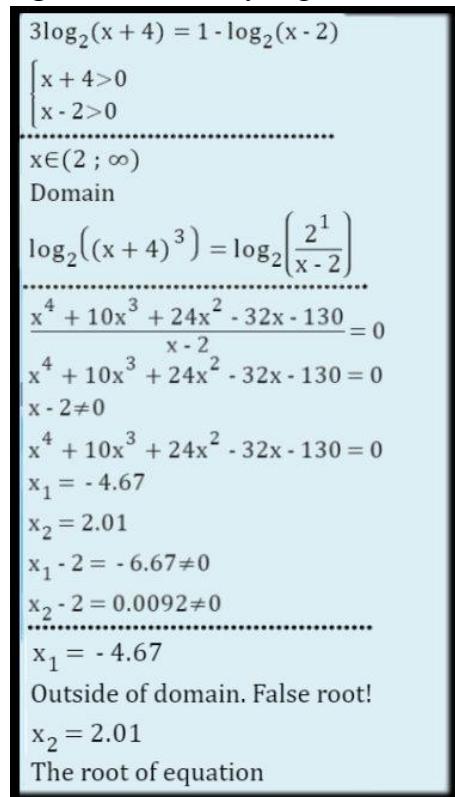
b) Even if students do not recognize the mistakes, they are aware of the possibility and, following the instructions, can check the answers using two math programs included in the Chat-Mat kit: graphing a function using Graph-Man (Figure 7) and solving equations using Algebraic Calculator (Figure 8).

Figure 7. Graphical Solution by “Graph-Man”



The graph of the function shows the intersection of the two branches of the equation, indicating that the equation has a solution. The same solution can be obtained using the algebraic calculator.

Figure 8. Solution by Algebraic Calculator



These results contradict the answers given by ChatGPT, and this contradiction can arouse students' curiosity, prompting them to contact the bot for clarification and identify the source of errors (Figure 9).

Figure 9. Correspondence with ChatGPT

 **You**
Wrong: in the first step it should be $1=\log_2$ of 2 and not of 1

 **ChatGPT**
You're correct. Let's correct that.

Given the equation $3 \log_2 (x + 4) = 1 - \log_2 (x - 2)$, we start by condensing the logarithms:

$$3 \log_2 (x + 4) + \log_2 (x - 2) = 1$$

$$\log_2 (x + 4)^3 + \log_2 (x - 2) = 1$$

$$\log_2 [(x + 4)^3 \cdot (x - 2)] = 1$$

Now, applying the property of logarithms $\log_b M = N$ can be rewritten as $b^N = M$, we have:

$$2^1 = (x + 4)^3 \cdot (x - 2)$$

$$2 = (x + 4)^3 \cdot (x - 2)$$

$$2 = (x + 4)(x + 4)(x + 4) \cdot (x - 2)$$

$$2 = (x^2 + 8x + 16)(x - 2) \text{ ?}$$

improve student's understanding of the problem, even if the ChatGPT's solution is accurate.

This is especially important for algebraic problems, where a graphical representation of the solution is indispensable. Since the current free version of ChatGPT lacks graphical capabilities, using these tools becomes even more invaluable.

For example, when calculating a limit $\lim_{x \rightarrow 0} \left(\frac{\sin x}{x/\pi} \right)$ checking the result, a student can perform the following actions:

Calculate the limit manually. (a)
Confirm the result using ChatGPT. To do this, the expression for the limit (b)
must be written in the appropriate format; the problem is solved using one of
the ChatMat tools - the Formula Editor. The student can then create a prompt
using the included instructions from the toolkit and send it to ChatGPT.

Figure 10 shows the output generated by the bot, allowing the student to compare it with the manual output.

Figure 10. Response Generated by ChatGPT

please solve: $\lim_{x \rightarrow 0} \left(\frac{\sin x}{x/\pi} \right)$



To solve the limit $\lim_{x \rightarrow 0} \left(\frac{\sin x}{x/\pi} \right)$, let's break it down step by step.

First, rewrite the expression inside the limit:

$$\frac{\sin x}{x/\pi} = \frac{\sin x}{x} \cdot \pi$$

Now the limit becomes:

$$\lim_{x \rightarrow 0} \left(\frac{\sin x}{x} \cdot \pi \right)$$

We can separate the limit into two parts:

$$\lim_{x \rightarrow 0} \left(\frac{\sin x}{x} \right) \cdot \lim_{x \rightarrow 0} (\pi)$$

We know that π is a constant, so:

$$\lim_{x \rightarrow 0} (\pi) = \pi$$

Next, we use the well-known limit:

$$\lim_{x \rightarrow 0} \left(\frac{\sin x}{x} \right) = 1$$

Combining these results:

$$\lim_{x \rightarrow 0} \left(\frac{\sin x}{x} \cdot \pi \right) = \left(\lim_{x \rightarrow 0} \left(\frac{\sin x}{x} \right) \right) \cdot \left(\lim_{x \rightarrow 0} (\pi) \right) = 1 \cdot \pi = \pi$$

Thus, the limit is:

$$\boxed{\pi}$$

If the results of both methods match, the student can review all solution steps and contextual explanations. However, if there is a discrepancy between the results, the student can use an algebraic calculator (as shown in Figure 11) to calculate the limit. Additionally, he can visualize the graph of the corresponding function using Graph-Man (as shown in Figure 12).

These additional tools provide a comprehensive understanding of the problem and help resolve any inconsistencies in the resulting solutions.

Figure 11. Result Obtained Using the Algebraic Calculator

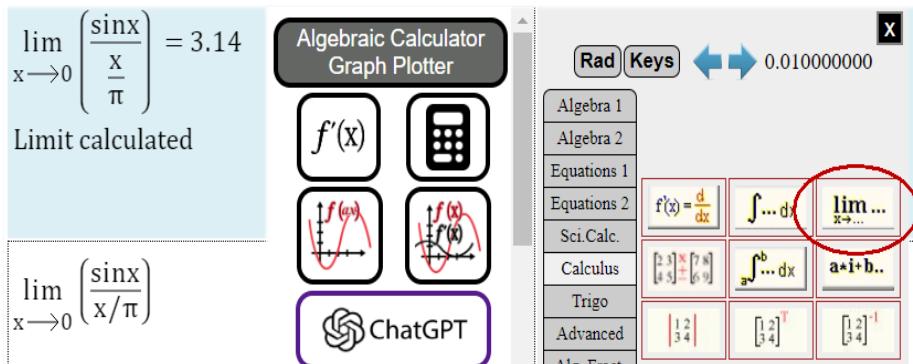
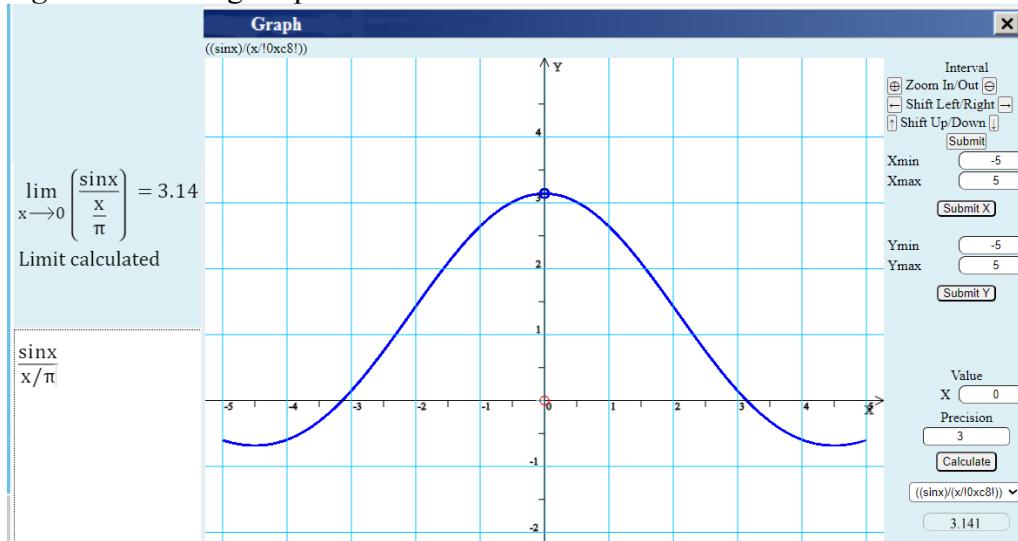


Figure 12. Utilizing Graph-Man



"One Who Knows"? Key Prompts as a New-Old Method of Self-Study

Once students become aware of the possibility that ChatGPT can make mistakes while solving a problem, they become more cautious, critical, and attentive to the information it provides. This situation can help educators offer an effective and meaningful learning experience with the help of a smart bot. Chat-Mat contains a prompt writing tutorial aimed at encouraging students to write their own prompts.

The idea of learning through asking questions and discussing different opinions is not new in teaching; it has its origins in Jewish tradition. Questioning is a Jewish religious concept that describes the philosophical principle of asking questions as part of the process of learning and understanding.

Today, students from various professions are studying prompt engineering. Educational publications also address this topic (Bringula, 2023). Guidance on this topic is provided in the Chat-Mat help file (Figure 13).

In addition to instructions for composing prompts that help students create them and send them to the bot, the Chat-Mat kit includes lists of recommended prompts. Each exercise that appears in the Learn and Train modes of the Halomda learning system provides access to ChatGPT and a list of typical prompts related to the subject of the exercise.

Figure 13. Access to Built-In Instructions and Key Prompts



The role of recommended prompts (Key Prompts) is twofold: first, to demonstrate to students how to most effectively formulate math prompts, and second, to increase students' motivation and curiosity by providing examples of three key questions related to the topic. These key issues are:

- Solve equations and common problems in the subject, .1
including calculating integrals and derivatives, simplifying expressions, and
questions from previous tests.
- Refreshing definitions, theorems and proofs. .2
- General facts from math history, different applications, .3
questions for understanding, fun, paradoxes, etc.

Key Prompts lists have been included in a variety of math and physics assignments, covering topics such as: *Complex Functions*, *Limits and Derivatives*, *Probability and Statistics*, *Quantum Mechanics*, and more. For example, Figure 14 presents some recommended prompts for statistics.

Figure 14. Recommended Prompts on Probability and Statistics

1. What is the difference between mean, median, and mode?
2. What is the interquartile range and how is it calculated from a dataset?
3. How is the standard deviation (dispersion) of a dataset calculated?
4. When do we use a pie chart representation and when do we use bar/column representation?
5. How to achieve a high score in a statistics exam in 10th grade?
6. What is the purpose of studying statistics?
7. Will knowledge of probability formulas help in winning the lottery?
8. What is the probability of an impossible event?
9. What is the difference between probability and odds?
10. What is the likelihood of rain tomorrow?

Methodology

A college semester lasts 13 weeks. For the Differential Equations course, each week included 2 hours of traditional classroom and 2 hours of distance learning (using the Halomda system). During distance learning, students were required to complete 5 mandatory laboratory works, 3 of which covered 2 academic topics each. Students were given 15 ChatGPT questions to help them find solutions to specific test problems. Additionally, each student had to create 5-6 of their own prompts related to the topics being studied. Assessments were given using the Halomda system, with a bonus of up to 5 points added in Moodle, depending on the quality of independently compiled prompts.

We would like to emphasize that one of the problems of traditional classroom teaching is the different levels of preparedness of students. The teacher faces the difficult task of conveying the material so that it reaches all students. The goal of encouraging students to create their own prompts is to provide them with explanations tailored to their level of understanding. For example, many problems involving Bernoulli's method require the use of the method of integrating coefficients as part of the solution. When working on these problems, a less-prepared student might (and experience shows that many do) ask ChatGPT to explain how the two methods for solving differential equations are related.

The primary purpose of our online survey conducted in 2024 was to answer the above research questions. We sought to examine the impact of the integrated artificial intelligence tools (including context Key Prompts) of the Halomda platform on the assessment of student performance in a Differential Equations course.

To achieve this goal, we asked 22 students to answer 13 questions. Finally, we looked for recommendations that could improve our system. Likert scale prompts were used to measure students' opinions (see Table 1).

Table 1. Responses About the Impact of the Usage of the Halomda's Integrated Tools

Question	Percent of Response
Did you use the Halomda platform for your assignments in Statistics? .1	
Yes	86%
No	14%
What is the average grade of all the works you submitted (1-100)? .2	
Above 80	90%
Below 80	5%
I did not submit	5%
What grade did you get on the final exam? (1-100) .3	
90-100	45%
80-89	30%
70-79	10%
60-69	5%
Below 60	10%

What are the modes of operation that you used? .4	
Test mode	33%
Train mode	50%
Learn mode	13%
I didn't use the platform	4%
What of the tools that the software offers (graph .5 sketcher, algebraic calculator, ChatGPT, key prompts) did you use?	
Graph sketcher	8%
Algebraic calculator	28%
ChatGPT integrated in the Halomda	20%
Key prompts	44%
Have you tried to get solution to .6 the problems through ChatGPT?	
Yes	40%
No	60%
Do you agree that we can trust the solutions provided by .7 ChatGPT?	
Strongly agree	20%
Agree	10%
Neutral	20%
Disagree	20%
Strongly disagree	30%
What means did you use to verify the solution suggested .8 by ChatGPT?	
Algebraic calculator	35%
Graph sketcher	15%
I asked ChatGPT to check the solutions steps again	15%
I did not check the solution	35%
Have you extensively used .9 ChatGPT to get answers on general topics such as the history of mathematics or the use of statistics in different branches of mathematics?	
Strongly agree	10%
Agree	5%
Neutral	20%
Disagree	30%
Strongly disagree	35%
Do you agree that it was difficult for you to compose .10 prompts in mathematics subjects?	
Strongly agree	35%
Agree	30%
Neutral	25%
Disagree	5%
Strongly disagree	5%
Did you use the recommended .11 prompts, or created them yourself?	
I used only the recommended prompts	30%
I created them myself	22%

I used both recommended prompts and ones I created myself	48%
Do you agree that the system (Halomda) helped you in .12 preparing for the exam?	
Strongly agree	50%
Agree	30%
Neutral	10%
Disagree	5%
Strongly disagree	5%
Do you agree that the usage of the system was clear .13 and convenient?	
Strongly agree	55%
Agree	20%
Neutral	10%
Disagree	5%
Strongly disagree	10%

Participants

The study population included regularly enrolled first year students of KAY College of Education during the first semester of the 2023/2024 academic year. The study sample was selected from students specializing in “Teaching Sciences in Middle Schools” who were enrolled in the “Differential equation” course.

Results

Q1: To what extent did the use of the Halomda platform's Learn, Train and Test modes enhance student learning outcomes?

According to student responses, 86% of them used the platform to complete their weekly assignments, which corresponds to the average grade they received on assignments (90% of them received more than 80 points). At the same time, 75% of students received a score above 80 points on the final exam (45% - above 90 points). The most preferred mode for using the system is the “Train” mode (50% of students used it), followed by the “Exam” mode (33%) and the “Learn” mode (13%); only 4% of respondents did not use the system (see Table 1). Thus, the results clearly show that widespread use of the Halomda platform for teaching, learning and testing definitely improves student learning outcomes.

These results align with the findings of Slobodsky and Durcheva (2024) and Slobodsky, Durcheva, and Kugel (2024), which demonstrate that using the Halomda platform increased student interest and engagement in the subject, as well as significantly improved learning outcomes.

Q2: To what extent can the use of ChatGPT stimulate students' interest and desire for self-learning?

It is worth noting that there are not many studies on the impact of ChatGPT on students' interest and desire for self-learning, especially in the field of mathematics education. To the question "Have you tried getting solutions to your questions via ChatGPT?", 40% of the respondents answered positively, and 60% answered negatively. These results are consistent with the fact that 50% of students do not trust ChatGPT solutions.

To the question: "Do you agree that we can trust the solutions provided by ChatGPT?" (Respondents could rate their answers on a 5-point Likert scale - Table 1), about 30% of the students indicated that they trusted ChatGPT solutions (20% completely agreed), and 50% did not. Moreover, about 65% of them gave a positive answer to the question "Do you agree that it was difficult for you to compose prompts in mathematics subjects?". To the question "Have you widely used ChatGPT to get answers to general topics, such as: history of mathematics, use of statistics in different branches of mathematics?", respondents could answer on a 5-point scale. The responses show that only 15% of them used ChatGPT for research purposes. The results indicate that it is "too early to say" whether utilizing ChatGPT stimulates students' interest and desire for self-learning. Simply put, half the students didn't trust it. This may be due to the fact that most students used the free version of ChatGPT 3.5, which was known to contain a number of computational errors that could dissuade students from using it.

Our results are consistent with those of other researchers who highlight that although ChatGPT has a positive effect on learning motivation, students' usage frequency and knowledge level remain relatively low, indicating the need for further training (Zhou & Li, 2023). Considering the current teaching and learning environment, some researchers believe that ChatGPT serves as a tool for requesting and supporting information rather than replacing the teacher's role (Hui, Qian, & Zheng, 2023).

Q3: To what extent can the use of the AI toolkit integrated into the Halomda platform improve student learning performance?

Answers to the question "Which of the tools that the system offers (graph plotter, algebraic calculator, access to ChatGPT, Key prompts) have you used?" showed that the most preferred tools were Key prompts (44%) and access to ChatGPT (20%). To test the solutions provided by ChatGPT, the respondents most often used algebraic calculator (35%), followed by graph plotter (15%) and ChatGPT (15%). It can be noted that 35% of students did not check the obtained solutions. These results are somewhat alarming, as they may suggest a lack of critical thinking. However, this could be due to students' lack of experience with these types of tools, which may not always provide accurate answers.

According to the answers to the question: "Did you use the recommended prompts or create them yourself?", we can conclude that the Key prompts provided by

the Halomda system turned out to be a useful tool (only 22% of respondents did not use them). The reason for this may be that students have difficulty creating (and then typing) math prompts.

The majority of students (75%) felt that using the tools offered by the Halomda system was clear and convenient. This is consistent with the responses to the last question of the survey: "What would you recommend to be improved or added to the program?" Students responded with things like, "This is a good program," indicating that they appreciated the help provided by the Halomda system. Some students noted that "the math formulas are a little difficult to type," which is a common problem for people without experience.

In conclusion, we can say that for most students, having access to a range of different AI tools does improve their academic performance. On the other hand, a study presented by El-Seoud, Shehab, Nagaty, and Karam (2023), found that approximately one-third of the teachers surveyed observed noticeable changes in student learning outcomes due to the use of ChatGPT. In our opinion, it is very important for future teachers to see and/or critically evaluate various decisions (both right and wrong), and the Halomda system provides them with this opportunity.

Discussion and Conclusions

The main goals of the survey were to better understand how to use the new capabilities provided by AI to help students in their learning (and self-learning) process. Artificial intelligence tools are rapidly integrating into our lives, forcing us as educators to decide how to turn these tools into our allies and helpers. For this, it is extremely important to know the opinions of students. Much can be learned from the student responses presented in this study.

The research responses showed that leveraging the learning, training, and testing capabilities of the Halomda platform significantly improved student learning outcomes. Feedback from respondents shows that we cannot say with certainty that ChatGPT increases students' interest and motivation for independent learning.

We suggest that one reason for this is that half of the students did not trust this method. Conversely, the data clearly shows that access to a variety of tools significantly improves student learning outcomes.

However, our study has a number of limitations that should be taken into account. The number of participants may not be sufficient to generalize the results; it was conducted with a small group of 22 students (human boundaries) during the first semester of the 2023/2024 academic year (temporal boundaries) at KAY College of Education, Israel (spatial boundaries), and it was aimed exclusively at Differential equation course (subject boundaries). However, it is important to note that in-service teachers were not included in this study.

Despite this, the teacher who conducted the study reported that using ChatGPT with students to explore questions and answers together fostered a collaborative learning environment. This approach enhances cooperation and trust between teacher and students, thereby improving teacher-student relationships. By observing students' interactions with ChatGPT and working together to explore questions and answers, a

teacher can better understand student needs and areas of difficulty, providing more targeted assistance. These results are actually consistent with the results of the study (Hui, Qian, & Zheng, 2023).

As future work, we plan to invite teachers who use the proposed methods in their classes to participate in a similar study. Their insights and experiences are valuable, and we aim to focus our subsequent research on their perspectives to enrich our understanding of the topic.

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