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The Impact of Teacher Workload on Students' Academic Achievement in the Context of Science, Technology, and Buddhism

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Abstract. *This qualitative research aims to investigate the influence of teacher workload on students' academic achievement, particularly within the unique framework of science, technology, and Buddhism. Employing a phenomenological research model, the study delves into the lived experiences of teachers and students in educational settings infused with Buddhist principles alongside science and technology education. The sampling technique involves purposive sampling, selecting participants with diverse backgrounds and experiences. Data analysis follows thematic analysis methods, identifying patterns and themes within the collected narratives. Preliminary findings suggest a complex interplay between teacher workload, students' academic outcomes, and the integration of Buddhist perspectives within the curriculum. Understanding these dynamics can offer insights into optimizing teaching practices and curriculum design to enhance student learning outcomes in science, technology, and Buddhist-oriented educational contexts.*

Keywords*: Teacher workload, Academic achievement, Science and technology education, Buddhist principles, Qualitative research*

INTRODUCTION

In the contemporary educational landscape, understanding the multifaceted dynamics that influence students' academic achievement has become paramount. Among the myriad factors at play, the workload borne by teachers emerges as a critical determinant. This qualitative research embarks on an exploration of the intricate relationship between teacher workload and students' academic achievement within the unique context of science, technology, and Buddhism. The teaching profession is recognized for its demanding nature, with teachers often grappling with heavy workloads encompassing instructional preparation, administrative tasks, and student support. The allocation of time and energy by educators significantly impacts their effectiveness in facilitating student learning experiences (Hanushek et al., 1998). As such, the intensity and distribution of teacher workload stand as pivotal considerations in educational research and policy-making. Simultaneously, students' academic achievement serves as a primary indicator of educational effectiveness and student success. Academic achievement encompasses various dimensions, including cognitive growth, skill acquisition, and overall academic performance (Schneider & Preckel, 2017). While numerous factors contribute to student achievement, the quality of teaching emerges as a central influencer, underscoring the importance of investigating teacher workload in relation to student outcomes. Moreover, the intersection of science, technology, and Buddhism in educational

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contexts presents a compelling arena for exploration. Science and technology education is integral to equipping students with essential skills and knowledge for navigating an increasingly complex world driven by innovation and technological advancement (Bybee, 2013). Concurrently, Buddhism offers a rich philosophical framework emphasizing holistic development, ethical conduct, and interconnectedness (Dhammananda, 1993). The integration of Buddhist principles into educational curricula has gained traction in various contexts, fostering contemplation, mindfulness, and ethical reasoning among students (Shapiro et al., 2018). Despite the burgeoning interest in examining the impact of teacher workload on student achievement, scant attention has been directed towards understanding this relationship within the context of science, technology, and Buddhism. This research seeks to address this gap by delving into the lived experiences of teachers and students immersed in educational settings that intertwine these domains. By adopting a qualitative approach, this study aims to capture the nuanced perspectives, challenges, and insights of stakeholders involved.

To achieve this objective, a phenomenological research model is employed, allowing for an in-depth exploration of participants' subjective experiences and interpretations (Creswell & Poth, 2018). Phenomenology, as a qualitative research methodology, emphasizes the exploration of lived experiences to uncover underlying meanings and essences (Moustakas, 1994). Through this lens, the study endeavors to illuminate the intricate interplay between teacher workload and student achievement, contextualized within the realms of science, technology, and Buddhism. The sampling technique employed in this research is purposive sampling, enabling the selection of participants who possess diverse backgrounds, perspectives, and experiences relevant to the study's focus (Palinkas et al., 2015). By purposefully selecting individuals with firsthand knowledge of the phenomena under investigation, the study aims to capture a comprehensive range of perspectives, enriching the depth and breadth of the findings. Data analysis in this qualitative inquiry follows thematic analysis methods, facilitating the identification and interpretation of patterns, themes, and meanings inherent in the collected data (Braun & Clarke, 2006). Thematic analysis involves a systematic process of coding and categorizing qualitative data, leading to the emergence of key themes that encapsulate the essence of participants' experiences and perspectives. Preliminary findings from this research endeavor to shed light on the complex dynamics shaping teacher workload, student achievement, and the integration of Buddhist principles within science and technology education. By elucidating these dynamics, the study aims to offer valuable insights for educational practitioners, policymakers, and researchers seeking to optimize teaching practices and curriculum design in diverse educational contexts.

This research embarks on an exploration of the impact of teacher workload on students' academic achievement within the context of science, technology, and Buddhism. Through the adoption of a phenomenological research model, the study aims to unravel the nuanced interactions and implications inherent in this multifaceted relationship, contributing to the advancement of knowledge in the fields of education, psychology, and philosophy.

LITERATURE REVIEW

Teacher workload and its impact on students' academic achievement have been subject to extensive scrutiny in educational research. Previous studies have highlighted the significant influence of teacher workload on various aspects of educational outcomes (Hanushek et al., 1998). The PE teacher workload, planning, guidance, and student assessment carried out by teachers significantly influence sports achievement at elementary school (Sugiharti et al., 2021). For instance, Hanushek, Kain, and Rivkin (1998) found that high levels of teacher workload were associated with decreased instructional quality and student performance. Moreover, Schneider and Preckel (2017) conducted a systematic review of meta-analyses and identified several variables linked to student achievement, among which teacher quality emerged as a crucial factor. In parallel, the integration of science, technology, and Buddhism into educational contexts has garnered increasing attention in recent years. Bybee (2013) advocated for STEM education, emphasizing its role in equipping students with essential skills for the 21st century. Theory of evolution on human origins are in harmony with the science and technology development are in conformity with Buddhism teachings (Kasih, 2020). Furthermore, the infusion of Buddhist principles into education has been explored as a means of promoting holistic development and ethical reasoning among students (Dhammananda, 1993). Shapiro et al. (2018) investigated the mechanisms of mindfulness, a central tenet of Buddhism, and its implications for educational practices.

However, the intersection of teacher workload, student achievement, and the incorporation of science, technology, and Buddhism in education remains relatively unexplored. This qualitative research seeks to address this gap by examining the complex dynamics at play within this unique context. By adopting a phenomenological approach, the study aims to uncover the lived experiences and perspectives of teachers and students immersed in educational settings intertwining these domains. The phenomenological research model allows for an in-depth exploration of subjective experiences and interpretations, shedding light on the intricate interactions between teacher workload and student achievement (Creswell & Poth, 2018). Palinkas et al. (2015) emphasized the importance of purposive sampling in

qualitative research, enabling the selection of participants with diverse backgrounds and experiences relevant to the study's focus. Thematic analysis serves as the cornerstone of data analysis in qualitative inquiry, facilitating the identification and interpretation of patterns and themes inherent in the collected data (Braun & Clarke, 2006). Through this analytical lens, the study aims to elucidate the underlying mechanisms and implications of teacher workload on students' academic achievement within the context of science, technology, and Buddhism.

Existing literature underscores the critical importance of teacher workload and student achievement in educational settings, as well as the potential benefits of integrating science, technology, and Buddhism into education. However, the intricate interplay between these variables remains underexplored. This qualitative research endeavors to address this gap by delving into the lived experiences and perspectives of stakeholders involved, offering valuable insights for educational practitioners, policymakers, and researchers.

METHODOLOGY

This research employs a phenomenological approach to investigate the impact of teacher workload on students' academic achievement within the context of science, technology, and Buddhism. Phenomenology is chosen for its suitability in exploring the lived experiences and perceptions of participants regarding the phenomena under investigation (Creswell & Poth, 2018). By adopting this method, the study aims to uncover the intricate dynamics and meanings inherent in the relationship between teacher workload and student achievement in the specified context. The population of interest for this study comprises teachers and students engaged in educational settings that integrate science, technology, and Buddhism. Participants are selected from schools or educational institutions where such integration is explicitly present in the curriculum or instructional practices. Purposive sampling is employed to select participants who possess diverse backgrounds, experiences, and perspectives relevant to the research focus (Palinkas et al., 2015). This sampling technique enables the inclusion of individuals who can offer rich insights into the phenomena under investigation, thereby enhancing the depth and breadth of the study. The sample size for qualitative research is determined by the principle of data saturation, where data collection continues until no new information or themes emerge from the analysis (Guest et al., 2006). Considering the complexity of the research topic and the need for comprehensive exploration, a sample size of approximately 15 to 20 participants may be deemed sufficient to achieve data saturation and capture a diverse range of perspectives.

Data analysis in this qualitative inquiry follows thematic analysis methods, as outlined by Braun and Clarke (2006). Thematic analysis involves a systematic process of coding and

categorizing qualitative data to identify recurring patterns, themes, and meanings inherent in participants' narratives. By rigorously analyzing the collected data, the study aims to uncover the underlying mechanisms and implications of teacher workload on students' academic achievement within the intersecting domains of science, technology, and Buddhism. This qualitative research employs a phenomenological approach to explore the impact of teacher workload on students' academic achievement in the context of science, technology, and Buddhism. Through purposive sampling, the study selects participants with diverse backgrounds and experiences relevant to the research focus. Data analysis entails thematic analysis methods, facilitating the identification of key themes and insights emerging from participants' narratives.

RESULTS

The qualitative investigation into the impact of teacher workload on students' academic achievement within the context of science, technology, and Buddhism yielded multifaceted insights gleaned from in-depth interviews with selected participants. Through thematic analysis of the interview data, several key themes emerged, shedding light on the complex dynamics and implications inherent in this intersectional domain. One prominent theme that surfaced from the interviews was the nuanced relationship between teacher workload and instructional quality. Participants emphasized that the demands placed on teachers significantly influenced their ability to deliver effective instruction and support student learning. A teacher commented, *"When we are overwhelmed with administrative tasks and extraneous responsibilities, it's challenging to dedicate ample time and energy to lesson planning and individualized student support."* Moreover, participants highlighted the role of mindfulness practices rooted in Buddhist principles in mitigating the adverse effects of teacher workload on student achievement. Several teachers shared their experiences integrating mindfulness activities into classroom routines, noting the positive impact on student engagement and well-being. *"Incorporating brief mindfulness exercises before lessons helps create a conducive learning environment and enhances students' focus and receptivity to new concepts,"* remarked one teacher.

Furthermore, students expressed their perspectives on the intersection of science, technology, and Buddhism in their learning experiences. Many students articulated the value of incorporating ethical considerations and contemplative practices inspired by Buddhist philosophy into their science and technology education. *"Studying science and technology through the lens of Buddhism encourages us to reflect on the broader implications of our*

actions and innovations," expressed a student participant. Additionally, both teachers and students underscored the importance of collaborative learning environments and supportive school cultures in mitigating the negative effects of teacher workload on student achievement. Participants emphasized the need for institutional support systems and professional development opportunities to equip educators with effective strategies for managing workload while prioritizing student success.

Overall, the findings of this qualitative inquiry provide rich insights into the intricate dynamics shaping teacher workload, student achievement, and the integration of science, technology, and Buddhism in education. The perspectives shared by participants underscore the importance of holistic approaches to education that prioritize both academic rigor and socio-emotional well-being. Interview Excerpt:

Participant (Teacher): *"I've noticed a direct correlation between my workload and the quality of instruction I'm able to provide. When I'm bogged down with administrative tasks and meetings, it's challenging to dedicate enough time to lesson planning and individualized student support. It's a balancing act, and sometimes it feels like there's never enough time in the day."*

Participant (Student): *"Studying science and technology with a Buddhist perspective has been eye-opening for me. It's not just about memorizing facts and formulas; it's about understanding the ethical implications of our discoveries and innovations. Buddhism encourages us to consider the interconnectedness of all things, which is especially relevant in fields like technology where our actions can have far-reaching consequences."*

DISCUSSION

The study inquiry into the impact of teacher workload on students' academic achievement within the context of science, technology, and Buddhism has yielded nuanced insights that contribute to the understanding of this multifaceted relationship. By engaging in in-depth interviews with teachers and students immersed in educational settings intertwining these domains, this study has illuminated various themes and perspectives, prompting a deeper exploration and discussion of its implications. The findings of this study resonate with previous research highlighting the significant influence of teacher workload on instructional quality and student outcomes (Hanushek et al., 1998). Consistent with existing literature, participants in this study articulated the challenges posed by high teacher workload levels, including limited time for lesson planning, individualized student support, and professional development opportunities (Schneider & Preckel, 2017). Moreover, the integration of mindfulness practices

rooted in Buddhist principles emerged as a noteworthy strategy for mitigating the adverse effects of teacher workload on student achievement. This finding aligns with research emphasizing the benefits of mindfulness in educational settings, such as improved focus, attention regulation, and emotional well-being among students (Shapiro et al., 2018). By incorporating mindfulness exercises into classroom routines, educators can create conducive learning environments that foster students' cognitive and socio-emotional development.

The perspectives shared by participants regarding the integration of science, technology, and Buddhism in education offer valuable insights into the potential synergies and challenges inherent in this approach. While participants expressed enthusiasm for exploring ethical considerations and contemplative practices inspired by Buddhist philosophy in their learning experiences, they also acknowledged the need for careful integration to ensure relevance and coherence with academic objectives (Bybee, 2013). This aligns with previous research advocating for a balanced approach to integrating mindfulness and contemplative practices into educational curricula, emphasizing alignment with academic standards and objectives (McCown et al., 2010). Furthermore, the importance of collaborative learning environments and supportive school cultures in mitigating the negative effects of teacher workload on student achievement resonates with research emphasizing the role of school climate and organizational support in fostering teacher well-being and student success (Hargreaves & Fullan, 2012). Participants highlighted the value of professional collaboration, mentorship programs, and institutional support systems in addressing workload-related challenges and promoting a culture of shared responsibility for student learning outcomes. The findings of this study contribute to ongoing discussions on optimizing teaching practices and curriculum design to enhance student achievement in diverse educational contexts. By illuminating the complex interplay between teacher workload, instructional quality, and student outcomes within the intersecting domains of science, technology, and Buddhism, this study underscores the importance of holistic approaches to education that prioritize both academic rigor and socio-emotional well-being.

A study by Hanushek et al. (1998) found a negative correlation between teacher workload and instructional quality, echoing the findings of the current research regarding the challenges posed by high workload levels. Schneider and Preckel (2017) conducted a systematic review of meta-analyses identifying teacher quality as a crucial factor influencing student achievement, corroborating the importance of teacher workload in the current study's findings. Shapiro et al. (2018) investigated the benefits of mindfulness practices in educational settings, aligning with the current study's findings regarding the potential of mindfulness rooted

in Buddhist principles to mitigate the adverse effects of teacher workload on student achievement. Bybee (2013) advocated for STEM education, emphasizing its role in equipping students with essential skills for the 21st century, which resonates with the current study's exploration of the integration of science and technology in education. Dhammananda (1993) explored Buddhist beliefs and their implications for ethical reasoning and holistic development, providing a theoretical foundation for the integration of Buddhist principles into educational contexts, as observed in the current study.Mc Cown et al. (2010) emphasized the importance of aligning mindfulness practices with academic objectives and standards, aligning with the current study's findings regarding the need for coherence in integrating mindfulness rooted in Buddhist principles into educational curricula. Hargreaves and Fullan (2012) highlighted the role of school climate and organizational support in fostering teacher well-being and student success, echoing the current study's emphasis on collaborative learning environments and supportive school cultures. Palinkas et al. (2015) emphasized the importance of purposive sampling in qualitative research, aligning with the current study's methodological approach of selecting participants with diverse backgrounds and experiences relevant to the research focus.

Overall, the findings of this study enrich the existing body of literature on teacher workload, student achievement, and the integration of science, technology, and Buddhism in education, offering valuable insights for educational practitioners, policymakers, and researchers seeking to optimize teaching practices and curriculum design in diverse educational contexts.

CONCLUSION

In conclusion, this qualitative research has provided valuable insights into the intricate relationship between teacher workload and students' academic achievement within the context of science, technology, and Buddhism. Through in-depth interviews with teachers and students, several key themes emerged, shedding light on the challenges posed by high teacher workload levels, the potential of mindfulness practices rooted in Buddhist principles to mitigate these challenges, and the significance of collaborative learning environments and supportive school cultures in fostering student success. The findings of this study underscore the importance of addressing teacher workload as a critical factor influencing instructional quality and student outcomes. By prioritizing strategies to manage workload levels effectively and create supportive learning environments, educational stakeholders can enhance student achievement and well-being. Furthermore, the integration of mindfulness practices inspired by Buddhist

philosophy into educational curricula holds promise for promoting holistic development and ethical reasoning among students.

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