DAYANIKLILIK İÇİN TEORİK BİR ANALİZ: OKULLARDA KARMAŞIK UYUM SAĞLAYICI LİDERLİK MODELİ GELİŞTİRİLMESİ

A THEORETICAL ANALYSIS FOR RESILIENCE: DEVELOPING A COMPLEX ADAPTIVE LEADERSHIP MODEL IN SCHOOLS

Hamit ÖZEN[1] & Pınar YAVUZ[2]

Özet

Karmaşık Uyum Sağlayıcı Liderlik, okulların sürekli değişim ve gelişim süreçlerini anlamayı hedefleyen bir liderlik biçimidir. Bu liderlik tarzı, esneklik, iş birliği ve yeni zorluklara uyum sağlama üzerine odaklanır. Karmaşık Uyum Sağlayıcı Liderliği benimseyen liderler, okulları iç ve dış faktörlerden etkilenen dinamik sistemler olarak görür ve bu sistemlerde sürekli bir öğrenme kültürünü teşvik eder, yenilikçi düşünceyi desteklerler. Ayrıca, hem personeli hem de öğrencileri aktif çözüm süreçlerine dahil ederler. Bu liderlik yaklaşımı, okulların eğitim ihtiyaçlarına daha etkin yanıt vermesini sağlar ve öğrencilerin dayanıklılık kapasitelerini artırır. Karmaşık Uyum Sağlayıcı Liderlik, öğrenci dayanıklılığını öne çıkararak, öğrencilerin zorluklarla başa çıkma yeteneklerini geliştirir ve bu süreçte hem akademik hem de kişisel gelişimlerini destekler. Aynı zamanda, bu liderler her bireyin kendini değerli hissettiği destekleyici ve kapsayıcı bir okul kültürü oluşturur. Karmaşık Uyum Sağlayıcı Liderliği benimseyen liderler, uzun vadeli başarılar için sağlam temeller atar ve eğitim çıktılarını iyileştirirken daha uyumlu bir okul topluluğunun gelişmesini sağlar. Bu araştırma, karmaşık uyum sağlayıcı okul liderlerinin, öğrenci dayanıklılığını artırma sürecindeki rolünü ve liderlik uygulamalarının okul topluluğunun gelişimine katkısını incelemektedir. Artan akademik ve sosyal baskılar ışığında, bu çalışma, dayanıklılığı destekleme ve sınıf içi öğrenme pratiklerine entegrasyonu kapsayan geniş çaplı bir yaklaşımın önemini vurgulamaktadır. Bu araştırmada, Karmaşık Uyum Sağlayıcı Liderlik teorik bağlamda ele alınmıştır. Araştırmanın bulguları bu çerçevede analiz edilmiştir. Temel amacı, karmaşık adaptif okul liderlerinin öğrenciler ve personel arasında dayanıklılığı nasıl teşvik ettiğini ortaya koymak ve böylece genel okul ortamını ve eğitim çıktılarını nasıl iyileştirdiğini incelemek olan bu araştırmada bulgular önceden yapılan çalışmalar ile karşılaştırılarak yorumlanmıştır. Teorik analiz yöntemiyle yürütülen bu araştırma, okul liderliği uygulamaları ile öğrenci dayanıklılığını teşvik eden stratejilerin uygulanması arasındaki ilişkileri ortaya koymaktadır. Araştırmada ortaya konan model, dayanıklılık odaklı bir okul kültürünün yaratılmasının, öğretmenlere destek sunmanın, destekleyici ve kapsayıcı bir öğrenme ortamının oluşturulmasının ve öğretmenler için sürekli mesleki gelişimin sağlanmasının, okulun esnek ve destekleyici bir öğrenme ortamını sürdürmesine katkıda bulunacağını öne sürmektedir.

Anahtar kelimeler: Karmaşık uyum sağlayıcı liderlik, okul müdürü, dayanıklılık, okul iklimi

Abstract

The Complex Adaptive Leadership (CAL) is a type of leadership that seeks to capture the ongoing change processes of schools. This type of leadership entails flexibility, teamwork and the ability to address new problems. Complex Adaptive Leadership leaders consider schools to be systems that are open and complex, bounded by internal and external conditions, promote learning and support creativity. They also engage both the staff and the students in the problem solving process. This kind of leadership helps schools to meet educational needs better and enhances the students' ability to cope with challenges. Through the focus on student resilience, Complex Adaptive Leadership enhances the students' capacity to navigate through adversity and fosters both academic success and personal development. At the same time, these leaders foster a school climate that embraces all students and makes them feel that they belong and are useful members of the school.

[1] Hamit ÖZEN, Assoc. Prof. Dr., Educational Sciences, Eskisehir Osmangazi University, Eskisehir, Turkey. hamitozen@hotmail.com, 0000-0001-7604-5967
[2] Pınar YAVUZ, Ministry of National Education, Eskisehir, Turkey. pnryavuzzz@gmail.com, 0000-0002-7274-7491

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Applying the principles of Complex Adaptive Leadership helps build a strong foundation for the future and enhances unity within the school community, thereby increasing academic achievement. The study explores the part played by complex adaptive school leaders in developing student resilience and the part that their leadership styles play in the development of the school community. Thus, this research suggests that there is need to adopt a wider approach that includes resilience support and ensure that it is incorporated into classroom learning. In this study, Complex Adaptive Leadership is based on theory. The results of the study were discussed in the light of the above framework. The overall goal of this study is to understand how CASLs build resilience among students and staff to enhance the school environment and achievement. Through the application of theoretical frameworks, this work seeks to establish the link between leadership practices in schools and the application of strategies for enhancing student resilience. The model presented in the study indicates that developing a culture of resilience at school, promoting support for teachers, fostering a supportive and inclusive learning environment, and offering professional development for teachers will help the school to continue to support resilience and student well-being.

Key words: Complex adaptive leadership, school principal, resilience, school climate

EXPANDED ABSTRACT

Theoretical Framework

The theoretical framework holds that actions of school leaders affect the formation of a healthy school community. The elements of this framework are the adaptive leadership, the students' centered learning, and the whole school approach to supporting resilience. In this context, it is proposed to consider the complex adaptive leadership theory. Complex Adaptive Leadership (CAL) was introduced in late 1980s and early 1990s in the context of system thinking and sciences of complexity which are characterised by self-organisation and reactivity. This leadership strategy can be related to the works of Nick Obolensky, the author of the book that covers the principles of CAL known as Complex Adaptive Leadership (Obolensky, 2010). CAL challenges the vertical structural and the dictatorial leadership styles and advocates for the transformational, participative, flexible, and resilient leadership. According to the theory, organizations are chaotic systems that consist of a large number of links that are not always clear and can be changed at any time, so the leader should create conditions for self-organization. CAL has been applied in many sectors and contexts such as education, health and public administrations and has helped in addressing the problems that are typical of the contemporary organizations.

Thus, the selection of resilience as the main concept for the study is justified because it is an essential factor in education. It is important for the students to be resilient because it builds their capacity to face the challenges that are evident in the current learning environment and social relations. It enhances the element of fighting adverse situations in the society and still be able to survive and even thrive. Moreover, understanding the concept of resilience and its cultivation within a school setting can result in positive academic and psychological results and, consequently, contribute to students' achievements in and out of the school environment. The purpose of this study is to identify the role of Complex Adaptive School Leaders in building a student population that can cope with stress in today's society by enhancing their resilience.

Purpose or Problem Statement

Even today's educational systems are slowly evolving, students are exposed to a lot of stress that impacts both their academic performance and mental well-being. These stressors include academic performance and exams, peer relations, a fast increase in the rates of mental health disorders among young people. This potential to succeed in the context of the challenges lies in resilience: A repertoire of strategies whose aim is to assist the students in dealing with the challenges. This study is concerned with the characteristics of complex adaptive school leaders in developing a resilient student population in the midst of such challenging educational environments. Hereby, the organization is both proactive and reactive at the same time and is based

on the principles of adaptability, teamwork, and system thinking within schools. The purpose of this study is to establish how the complex adaptive school leaders manage to build resilience among the learners and faculty within the school in order to enhance the overall environment and achievement. This involves:

1. Identifying the impacts of the complex adaptive leadership practices on the academic achievement, students' perseverance, and psychological well-being.

2. In order to consider how these practices could be applied to the creation of supportive and inclusive classrooms and schools.

3. Examining the characteristics of the complex adaptive leaders and the characteristics of resilience in schools.

4. Drawing on the ways in which these leadership styles affect the student's psychological and academic outcomes.

Thus, the research will aim at finding concrete suggestions for school leaders on how these practices could be effectively introduced and sustained in order to prepare students for the challenges of the future generations Thus, this study seeks to contribute to the understanding of educational leadership by revealing how adaptive leadership can positively impact student resilience, thereby fostering learning environments in all parts of students' lives.

Method

The study used theoretical analysis, a rigorous method that entails a systematic examination and explanation of the existing theories, concepts, and viewpoints relevant to the research problem (Northouse, 2018). This method involves reviewing and evaluating theories that are available in the literature, relating the theories to the research question, and developing new theory (Thomas & Hodges, 2010). Theoretical analysis is crucial since it underpins several aspects of the research process, including the identification of the research area, the choice of methodology, and the interpretation of the findings (Swanson & Chermack, 2013). It allows scholars to explore the epistemological, ontological, and methodological foundations of particular research paradigms (Corley & Gioia, 2011). Through theoretical analysis, the researchers can find theoretical voids and challenge the prevailing paradigms and contribute to the development of knowledge (Punch, 2014). In this research, we selected resilience and complex adaptive leadership as the guiding framework and the overall worldview and way of knowing (Uhl-Bien, Marion, & McKelvey, 2007). Theoretical analysis is particularly helpful in situations that require a more detailed assessment of ideas and prior information. It is most useful for building a systematic understanding of a particular subject and for evaluating current theoretical paradigms. Therefore, in our research, we employed a literature review where we used documents, prior works, and publications to gather information, thus providing a comprehensive and critical analysis of the literature relevant to our study objectives.

Findings

The findings of the study show some of the characteristics and practices of complex adaptive leaders that are useful for student success. These are flexibility, teamwork, and the capacity to foster a healthy school climate.

Adaptability: School heads should be able to handle different issues that come with the school or learning institution. This is why they are flexible and can bend in order to cover the needs of their students and staff.

Collaborative Skills: These leaders encourage team work and foster an organizational culture that supports team work. They bring togetherness among the teachers and staff so that they can support one another and build the school fraternity.

Commitment to Positive School Culture: The complex adaptive leaders are concerned with the creation of a good environment in school. They provide an environment that ensures that the students feel safe, wanted, and important.

Another key finding of the study is that *Learner- Centered Leadership* is crucial for building up resilience. This approach focuses on the student and their well-being, which are the key aspects in learning according to the study. Learner-centered

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leaders provide physical and psychological access, social and emotional safety, and positive regard and growth perspective in learning environments.

The study confirms the centrality of *Professional Development* of the school leaders that is, a continuous process. For this reason, training programs that equip leaders in terms of how to support resilience enhancing interventions are required. It is for this reason that such programs should focus on the development of leadership, cooperation, and culture within the school. This means that when the school leaders enhance their leadership competencies in these areas, they will be in a position to assist the learners and create the environment that supports the development of the resilience skills. The second significant contribution of the study is that *Resilience Integration* across learning activities in the school is a whole-school approach. This involves developing a shared goal for resilience, implementing organizational structures, and creating a network. The concept of the shared vision of resilience helps in the alignment of the actions of the members of the school and provides a clear idea of what resilience is and how it can be developed. The formation of a network of support involves the development of positive relationships with students, teachers, other staff members and the society in general in order to form a support system for students to deal with the challenges they encounter.

Conclusion

The findings of the study have implications for practice and policy in education. Therefore, the research provides valuable suggestions on how schools can promote resilience and enhance the students' quality of life and academic achievements, based on the application of adaptive leadership and a whole-school approach to resilience. Effective school management plays a very significant role in enhancing the psychological well-being of students in their everyday life and in school. This research aids in enhancing the understanding of the dynamic nature of school leaders in creating a conducive environment in school for students to excel despite all the odds. The study offers the foundation for the subsequent research on leadership behavior to enhance the coping strategies of the students. In conclusion, this study highlights the importance of complex adaptive school leaders in improving the student resilience in school. Hence, by supporting learner-centered leadership and the establishment of the environment that enables learning, school leaders can enhance the student's coping capacity. It is imperative for the school leaders to undertake professional development that is continuous since through such the leaders can be equipped with knowledge and skills that would enable them support the resilience-building initiatives. The study also reveals that for resilience to be implemented in the school it has to be done systematically and must be supported by relational structures. In conclusion, this study provides valuable insights to the existing literature on how the school leaders may build and enhance student resilience. This paper has sought to demonstrate that by the application of the adaptive leadership approach and cultivation of a school culture students will be enabled to excel in their academic endeavors and lead healthy lifestyles. This approach not only assists the students in performing well academically but also assists them in solving problems in various facets of life. The findings of the study offer the foundation for future research on leadership behaviors that can foster students' resilience and practical approaches to enhancing resilience in schools.

INTRODUCTION

Thanks to the increasing awareness of the importance of student well-being, educators and educational administrators across the country have been seeking ways to enhance students' coping resources for academic and social stress (Lam & Cheng, 2024). Within our current culture of standards, expectations, and academic performance, it appears that nurturing student resilience may be a somewhat neglected concept (Antony & Schaps, 2021). Nevertheless, it is crucial; the most important personal quality should be appropriate in schools nowadays. Student resilience is currently one of the most discussed issues in many schools across the country (Beatty & Campbell-Evans, 2020).

Student resilience is a multifaceted and challenging process that incorporates numerous actors in the learning context. Different studies have emphasized the importance of strengthening students' resilience to enable them to deal with various problems and succeed in their academic endeavors. This process is facilitated by teachers and instructors by creating a positive environment (Frenzel et al., 2016), nurturing positive relations, and shaping community perception (Keung et al., 2019). In addition, studies have found that teachers' emotional support can boost students' academic resilience, school motivation, and achievement (Romano et al., 2021).

Furthermore, teachers' emotions and their interactions with students have been reported to affect students' attitudes, behaviours, and motivation (Prosen et al., 2018). Thus, the role of teachers in providing emotional support is associated with developing a positive learning environment, helping the children to adapt to the school environment, increasing their motivation, and promoting creativity (Siu & Wong, 2014).

The personal qualities of the teachers are also important in the development of resilience in students as they help in the development of the students' skills (Ayala & Manzano, 2018). Furthermore, the research has established that teacher support activities have a positive relationship with academic resilience and this decreases the chances of students developing psychological problems. Also, self-compassion has been found to be a key element in academic resilience especially during tough times like the pandemic (Yustika & Widyasari, 2021).

While most studies in the past have been focused on student resilience, our research instead shifts the focus to a different but just as important topic: The role of school leaders, especially Complex Adaptive System leaders, in promoting sustainable resilience in schools. This is because school leaders are key in enhancing and sustaining student resilience despite the fact that there is scant literature on the leadership of resilience in schools. Also, it is important to identify the resilient leaders in schools because school leaders are the first to help in providing the ongoing understanding of what success means in a school and how the moral purpose strengthens the resilience. From this article, it becomes possible to identify the various aspects of resilience and be able to name the actual leadership characteristics that result in a successful student government.

Aim and Importance of the Study

The paper also analyzes the importance of the school leaders in the process of building resilience among students. Resilience is the concept that refers to the process of being able to recover from, or to be protected from, the negative effects of stressors, and it has been conceptualized as a positive developmental construct in children and adolescents (Eaton et al., 2022). This viewpoint conforms to the positive psychology approach which underscores the importance of developing the capacity and enhancing the quality of life as opposed to focusing on the negative aspects and attempting to fix them. Within a school setting, resilience indicates that the student has positive outlook on learning, good relationships with teachers and peers, and being willing to help the others (Wang et al., 2021).

Over the last few years, enhancing students' resilience has emerged as one of the critical agendas in many schools and educational policies. But it is also crucial to understand that the enhancement of student resilience is not the responsibility only of teachers and school administrators (Koçak, 2021). Thus, to impose students to become more resilient in the current and future classroom environments is rather unlikely when the only method of teaching used in the classroom is direct instruction. However, what is clear now is that there is a growing need to build resilience at the system and school level in the way that learning takes place for students. This approach is rather close to the idea that the development of the school culture, especially the formation of a positive climate favorable for learning can be viewed as the most effective way to unleash students' potential for developing resilience.

School administrators, who hold the responsibility for defining the culture of the school and charting the course of the school's growth, are thus in the most appropriate position to coordinate such efforts in resilience enhancement (Galloway & Ishimaru, 2020). Nevertheless, the current literature contains only a few research articles that focus on this issue. Thus, this study seeks

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to provide answers to this question by analyzing the connections between the leadership behaviors of school directors and whole-school approach in the development of resilience among students.

It is expected that the findings of this study will assist the school leaders to have a comprehension of the potential impact of leadership practices on the formation of a resilient community in schools. Consequently, this will help in the improvement of leadership professional development and training for enhancing student resilience in schools. This study will help in the establishment of more and better leadership programs in enhancing the resilience of students and schools.

Method

The study is mainly indigenous in nature and can be considered as an exploratory study in the field of education as it aims at testing the theoretical concept of complex adaptive school leaders. Such leaders know that change is a vital element of any successful organization and that they can quickly transform the organization to learn from people who are able to succeed in the world of constant change (Marion, 2008; McKelvey, et all. , 1999; Uhl-Bien, 2021). This is particularly important given that it is impossible to learn effectively without some degree of resilience.

It is increasingly being understood that the establishment of a strong learning culture in schools can empower children to face failure as a way to success. However, the idea of resilience in teaching and learning seems to be rather underdeveloped, and the part of the headteacher in promoting resilience in their schools has not been discussed at all in the literature reviewed so far.

The study will therefore aim at adding knowledge on student resilience and at the same time generate some important early findings on how school leaders can enhance student resilience. Therefore, the following research questions have been developed to guide the study: How do school leaders foster resilience in students? What leadership behaviors and strategies are most effective in promoting resilience among school leaders? What effect do leadership behaviors have on students' well-being and academic achievements? How can resilience be incorporated into students' daily routines? What training and professional development should be given to school leaders in order to effectively foster resilience among students? In this regard, previous related studies were analyzed and the results of these studies were discussed. First, the research aims at defining what student resilience means. Subsequently, it identifies the factors that influence student resilience, the significance of student resilience in the school context, the part played by adaptive school leadership in promoting resilience, building resilience as a school culture, enhancing teachers' ability to foster resilience, developing learning environments that support resilience, integrating SEL initiatives, guaranteeing teachers' professional learning, and partnering with community organizations. These themes are discussed in detail under the following headings.

We used theoretical analysis which is a type of research that involves a critical evaluation of theories, concepts, and paradigms that are relevant to the research area in question. It involves the assessment of current theories, their relevance to the study, and the generation of new theoretical frameworks. The process of theoretical analysis is significant since theoretical frameworks inform different stages of the research, including choosing a topic, developing methodology, and interpreting findings (Li, 2022). Furthermore, theoretical assessment is employed by researchers in order to explore the postulates, axioms, and operations associated with a particular line of inquiry (Culver et al., 2012). Through theoretical analysis, the scholars can reveal the holes in the current theories, question the dominant paradigms, and contribute to the development of knowledge in the field (López-Deflory et al., 2023). Theoretical analysis was highly important in the research where the concepts of resilience and complex adaptive leadership as theory, paradigm, and epistemology were employed to explain the theoretical foundations of the study (Collins & Stockton, 2018).

Understanding Resilience in Students

Currently, there is much controversy among psychological researchers regarding the definition of resilience and how it can be assessed. This is mainly because the construct in question is one that is quite broad and has many different aspects. Different definitions of resilience have been put forward by various scholars, and most of them concur that resilience is not a solitary characteristic but rather a dynamic process that takes place between an individual and their environment (Denckla et al., 2020).

In other words, resilience is defined as the capacity to exhibit normal and adaptive behaviour in the context of serious hardship. But identifying the concept of student resilience in the research context is even more problematic. School resilience researchers still differ in the definition of resilience and in the context of school resilience more than one hundred definitions can be found in a vast range of attributes characterising a school as a self-resilient organism. This means that we need to determine the sources and ways of resilience in students so that we can have a measure of change in the level of resilience in students. Although the concept of resilience in students is not easy to define and measure, identifying the factors that affect resilience in students can help to understand it better. These also assist in determining what student resilience is not and can, therefore, be used as a guide towards understanding resilience in schools.

Another factor that is known as the level of fortitude and coping skills has been identified as another factor that may influence the level of student resilience in their social and academic lives (Sarcia, 2020). Current studies have established that students' levels of hope and self- efficacy determine their level of resilience (Peck et al., 2019).

Defining and assessing student resilience is not a straightforward process and may differ between studies. This variability can further obscure the understanding of resilience by allowing for the assignment of numerous and even contradictory meanings to the term. This critical matter has not received the attention it deserves from policy-makers and school administrators. Therefore, as student resilience becomes more valued in schools, research in this area can help in identifying strategies and ways of improving and measuring student resilience in schools. As the importance of student resilience in school settings starts to be acknowledged, this area of study may slowly develop evidence-based change and efficacy in responding to the calls for enhancing and assessing student resilience in schools.

Another definition of resilience in students which is often cited can be found in the branch of psychology referred to as positive psychology. From this definition, resilience is the ability to cope optimally when faced with adversity, trauma, tragedy, stressors or threats (Yu et al., 2022). This definition underlines the fact that resilience is not a state that some children simply possess and others do not; rather, resilience is a process of positive adjustment to life conditions and the ability to sustain this positive adjustment. This means that the students who have been able to bounce back and adapt positively to the challenge or difficulty that they face in this school year are the resilient students, but for one to be resilient they should also be able to develop new and better strategies of handling challenges in the following school years (Bryan et al., 2020).

Another important concept embedded in this definition is that resilience is not an inherent characteristic that a student possesses or lacks; rather, resilience is a quality that can be nurtured and enhanced gradually. In this way, resilience is able to be developed and sustained through the various contexts of a student's life, including family, school, and community; it is a resource that must be developed and nurtured, much like other resources such as nutrition and physical health (Feldman, 2020). This view of resilience as a developmental process that can be fostered has significant implications for understanding student behavior and action in school. Through the lens of resilience, teachers and other school leaders can learn what students are likely to do in school and how they can help students build their capacity for coping, interpersonal relations, and seeking help. This focus on resilience shifts educators away from thinking about how to control or eliminate negative student behaviour and towards understanding what has led to the behaviour and how the student can be helped to make better decisions.

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Factors Influencing Student Resilience

There are therefore numerous factors that enhance the resilience of an individual. In general, factors such as practicing a healthy lifestyle, establishing proper nutrition, and engaging in physical activities regularly are included among these factors (Mukoma et al., 2023). Furthermore, problem solving skills, goal setting and self-regulation skills are also crucial as noted by Güven and Babayiğit (2020). As for intrapersonal factors, boosting self-esteem, accepting oneself, enhancing self-identity, developing humor, and adopting a positive outlook are factors that foster resilience (Azizah, 2021.

In addition, positive interpersonal relationships and support from family and peers, as well as maintaining these relationships and managing their expectations also have an influence on resilience (Iacoviello & Charney, 2014). Cultural and religious practices, norms, and values are acknowledged to influence the resilience of an individual. These factors can be treated by adopting a more integrated model in order to enhance the resilience of the person.

This is not an exhaustive list of factors that can enhance resilience; more research is ongoing to establish other means of improving the ability to cope with stress. They identified that students who are resilient, that is those who are able to cope well after adversity, are less likely to find themselves in a bad place because they employ multiple strategies of resilience (Perkins & Borden, 2003). The evidence is still not well established as to whether these strategies are effective on their own or in combination and how they contribute to building resilience is not fully understood. Not all of these strategies can be implemented in schools, however, identifying and fostering resilience in students is a challenging process. It entails examining and enhancing means of safeguarding them at different stages of their lives. According to Sylvester (2015), it is possible to adapt and build resilient behaviors. Zolkoski and Bullock (2012) posit that the process of helping students develop resilience is not clear and encompasses various aspects of the students' lives. It is important that young people learn how to become resilient in order to counter the undesirable aspects of education. This way we can make students feel that they are not alone, that someone cares for them and they will do better in school and beyond. The actions of the school leaders in enhancing student resilience are shaped by the societal, political, and cultural meanings of resilience.

Importance of Student Resilience in School Settings

Altogether, it can be stated that student resilience affects their learning process and their behavior at school in a positive manner (Skinner et al., 2020). Given the fact that these children are expected to cope with the day-to-day demands of the contemporary school setting, it is only reasonable to assume that they are likely to encounter various difficulties at one point or the other; these may include academic difficulties or social relationship issues with fellow students in some cases. The ability to cope and excel in such challenges can assist students in better regulating their conduct, feelings, and social relationships in academic settings, as well as in other aspects of their lives, including at home. This is significant in preserving the positive learning culture in schools, thus, the significance of nurturing and sustaining student resilience should not be overlooked (Ferreira et al., 2020).

This is recognized by the United Kingdom government, for example: The 'Every Child Matters' policy framework for children and young people in the UK includes the goal of early identification and early intervention of children's needs and pressures on their resilience regarding mental and emotional well-being (Paolini, 2020). For any kind of effective support rooted and located within a school environment, it is essential - first and foremost - that a school culture is developed and maintained in which building and maintaining student resilience is viewed as a priority and as something that is properly shared and owned by all staff: In leadership, in teaching, and in support roles alike. This is not an easy feat given the commodification and performativity of contemporary schooling, although it is even more important given their negative impact on student well-being and the creation of a more supportive culture.

This section explores how school leaders can actively build and sustain such a culture of resilience in terms of students and the school itself and its pressures. On the other hand, in schools where maybe academic results and league tables are given more consideration than the wellbeing of the students and their social needs, it is quite likely that student resilience is not given much thought and only becomes a concern when problems appear.

The Role of Complex Adaptive School in Fostering Resilience

The complex adaptive school leaders have a significant responsibility in developing a resilience oriented school and in ensuring that teachers encourage student resilience (Kershner & McQuillan, 2016). This is why the paper is suggesting an evolutionary, flexible, and readiness-based model to explain how resilience is maintained throughout different educational contexts. A study has indicated that the learner-centered leadership in the development of student resilience is crucial for a good school leader (Alam, 2022). This is in line with the findings of other studies that have identified the transformative leadership, including the adaptive and enabling change, as a key factor that defines the effectiveness of an educational institution in producing resilient students (Shvindina et al., 2022; Lin et al., 2022).

1. *Learner-Centered Leadership*: Uhl-Bien, Marion, & McKelvey (2007) explain how adaptive leadership helps to build student's resilience by creating flexible environments that can change to meet the needs of students. This enhances an environment that empowers the students and makes them the focal point in the learning process.

2. *Organizational Flexibility*: According to Fullan (2007), there is no doubt that flexibility is an important aspect of educational leadership that enhances innovation and adaptability in schools, which are elements of resilience.

3. *Emotional Support and Engagement*: Spillane (2006) elaborates on the benefits of leadership that is directed towards interactions and emotional support within schools to enhance the learning and coping outcomes of students.

4. *Collaborative Practices*: Bryk and Schneider (2002) elaborate the importance of relational trust between school principals and their communities, as such structures enhance collective efforts to address difficulties.

5. *Professional Development*: Leithwood and Sun (2012) explain that teacher development specifically on adaptability and coping strategies can positively affect student achievement. When put together, it can be seen that the strategies that school leaders should employ are congruent with a learner-centred approach and that there needs to be a systematic plan for how these principles will be enacted.

This integration of relevant theories emphasizes the importance of adaptive management that can support the development of student resilience and their learning achievements. This supports the notion that school leaders should harness the participatory notion of promoting student resilience and the creation of pedagogical interventions rather than adopting a more managerial approach. It can be done more effectively through a cooperative, ongoing, continuous improvement initiative. The findings indicate that more active learning and initiative aspects may be expressed and shared across a resilient system in schools (Masten, 2007). Secondly, the research also showed that the team approach ability can also promote the propagation of resilience (Sharma & Sharma, 2016). In other words, a school leader who has the quality of dynamic, polycentric compounds that reinforce the flexible network and, therefore, the sharing of the risks within the system. It may represent a consistent and adaptable, 'propagating type' that not only involves the teachers but also the society as a whole.

Resilience Vision and Culture
Leadership and Community Engagement
Promotional and Educational Tools

resilience–focused school culture

Support teachers for Student resilience

llReflective Practices
Strategic Communication and Vision
Managing Contradictions and Challenges
Empowerment and Delegation with Leadership

Establishment of Collaborative Leadership Model
Role of School Leaders and Teachers
Identification of Resilience Partners
Performance Improvement and Monitoring
Knowledge Sharing and Dissemination
Creation of a Shared Knowledge Pool

collaboration with partners

CAS-L FOSTERING RESILIENCE

supportive–inclusive learning environment

Modern Person-Centered Strategic Leadership:
Technological Advancements and Adaptive Curriculum
Revolutionizing Leadership Practices

Deep Understanding of SEL Exemplifying Resilience:
Workshops on Classroom Management:
Guidance on Curriculum Integration:
Instruction on Coping Strategies:
Teaching Problem-Solving Skills:
Collaboration Among Teachers
Assessing and Providing Feedback on Resilience:

professional development for teachers

SEL programs

Cultivation of Self-Awareness
Development of Self-Management Skills
Enhancement of Social Awareness
Responsible Decision-Making
Goal Setting and Perseverance
Cultivating a Positive Mindset
Development of Coping Strategies

Figure 1. Complex Adaptive School Leadership (CAS-L) fostering resilience

The main components and strategies to build resilience in the educational setting are elaborated in Figure 1 and are all encompassed under the concept of "CAS-L Fostering Resilience".

One of the major section, *Resilience-focused School Culture*, emphasizes the need for a clear and strong vision for schools and the culture of resilience. This involves the involvement of the community as well as the use of promotional and educational tools in support of these duties. It recognizes that the culture within schools with regard to leadership plays a crucial role in fostering resilience among learners.

The part of the document that deals with *Support for Teachers in Student Resilience* emphasizes that more and more professional development programs should be offered to the teachers to equip them with the skills to support student resilience. This means that the professional development of teachers is an organizational process by which the teachers are able to engage the learners in a way that will help them develop resilience.

Likewise, the *Supportive-Inclusive Learning Environment* part also supports the adoption of the modern, learner-centered approaches to leadership which includes technological and curricular shifts that meet the needs of every learner. This is crucial in the creation of a learners' environment that is not only sensitive to the learners' needs but also one that can address those needs.

Professional Development for Teachers is recognized as a key element, noting that teachers' professional growth in areas like SEL and resilience can have a significant impact on education outcomes. This is helpful in facilitating the teachers to implement resilience based strategies into their teaching practice.

Moreover, the *SEL Programs* section provides information on other areas such as self- and social-emotional learning which are useful in the development of student's coping skills. These are the fundamental aspects of SEL and are essential in the overall development of the student's personality.

Finally, the *Collaboration with Partners* section emphasizes that leadership involves not only school leaders and teachers but also the partners. This partnership is helpful in enhancing the resilience frameworks in educational setting and foster sharing of information and knowledge and experience. In conclusion, the infographic offers a step by step approach to show how CASL can be integrated into the educational management systems to foster a strong student community. The approach therefore emphasizes the importance of cooperation, having a partner, and preparing for the future, offering a clear roadmap to enhancing resilience in educational settings. Therefore, complex adaptive leaders are often cognizant of the needs of their school in relation to student learning and the success of the school (Özen, 2015; Fidan, 2017). They aim at modifying the existing characteristics to some extent or they come up with new characteristics that can help in preparing the students for resilience. Regarding the areas of personal and career success, the school leaders should help the students with career counseling and help them in identifying and selecting the right career and its progression. These programs help the students to prepare for the future, identify themselves, and become the best they can be. Such leaders also ensure that social-emotional learning programs are implemented in schools to address the well-being of individuals and help them in their interpersonal relationships (Oplatka & Arar, 2018) as complex adaptive leaders with other students and teachers.

School principals understand the social and emotional aspects that teachers and students face from the moment they come to school until the last moment, and from the start of the school year to the end of it. From such understanding, they can build an organizational culture that fosters professionals' learning and support (Admiraal et al., 2021). Such leaders are able to take the teachers through the changes and at the same time, create an environment where the teachers and students can be creative. The characteristics of complex adaptive systems are also seen in the qualities of complex adaptive school leaders. It means they love learning and not just for their own sake but for the sake of the entire school (Malik & Garg, 2020).

They accept the notion that teachers and students are stakeholders who can contribute to the improvement of the school by sharing their perceptions. They are very much people oriented leaders who manage their organizations in a very effective and

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fair manner. As noted by Leithwood and Louis (2021), the organization is always in pursuit of excellence and strives to build on the current systems in the organization. They are always on the lookout for new ideas and make sure that the organization embraces risk taking and any mishap that occurs is viewed as a lesson learned. They support team learning to understand the complex entities that are schools as organizations where no one has all the answers. These leaders appreciate listening, people's willingness to express themselves, and lack of communication (Pettersson, 2021). They adhere to the principles of effective communication to ensure that information is appropriately disseminated and thus promote the growth of their own and other teachers within the school.

Building a Resilience-focused School Culture

After setting the tone of resilience in the school, the next task for complex adaptive school leaders is to build a resilience-focused school culture. A resilience-focused school culture is one in which the environment and practices work in cohesion to promote student resilience, not only by supporting students in developing their personal resilience, but by fostering and celebrating a whole of community approach to resilience (Burns, 2020). There are several key components of a resilience-focused school culture that serve as a guide for the development of resilience across the entire school community. The first component is having a shared school vision and common language of resilience (Parkhill et al., 2015). A shared vision of resilience is aspirational, describing what the school community is collectively working towards. It needs to be articulated in a way that assists in motivating and engaging all members of the school community. The school leaders develop this collective school culture through ongoing communication and collaboration vision and empower the staff to contribute and steer its direction (Afifi et al., 2016), ensuring that there is ownership and investment in the lives of the staff in fostering resilience. A common motivational language also helps to promote a shared understanding of the concept of resilience and what it means to the community. By developing a language that is inclusive and customized to the different contexts of the various community compared with a generic or adult-driven language, leaders can help to build a greater sense of commonality and connectedness among the schools, families, and post-answer summarizes the purpose, components, and benefits of developing a resilience-focused school culture (Özen, 2013). Then provide explanations for whole of community approaches to resilience. A resilience poster is a visual depiction of the key components of a resilience-focused school culture. It assists the school community to visually.

Supporting Teachers in Promoting Student Resilience

Complex adaptive school leaders can also contribute to student resilience by helping teachers develop appropriate strategies for nurturing student resilience. Teachers also have a very vital part to play in ensuring that students are able to learn and demonstrate the various characteristics of resilience. Despite this, teachers continue to feel unprepared to nurture student resilience within the classroom environment (Chanana, 2021).

Studies have provided explanations on how school leaders may support teachers in building and enhancing resilience in students. First, teachers can be supported by providing them with adequate training and development in order to increase their awareness and knowledge of resilience in students. For instance, an assessment of a social emotional learning program for an entire city which teachers were provided professional development in the implementation of social emotional learning strategies and may also have access to a school mental health consultant. It assessed students' social and emotional learning and well-being and noted some advancement in teacher's pedagogy to foster students' psychosocial health (Mahoney et al., 2021).

Additionally, school leaders can contribute to the development of a culture of collaboration and collective responsibility for student well-being (Admiraal et al., 2021). These leaders can do this by ensuring and encouraging teachers to collaborate to share their experiences and knowledge on how to build resilience. Such shared leadership frameworks can help teachers to learn from each other and encourage each other in enhancing their practice whilst promoting student resilience. Thus, by implementing the concept of resilience within the staff and engaging students, teachers can start building a whole-school approach to students' well-being in which the entire school community is involved in supporting and fostering students' resilience.

This is in accordance with the literature that substantiates the idea that there are favorable correlations between the implementation of a whole school approach to building resilience and academic achievement. School leaders can also offer direct support to the staff through the aspects of instructional leadership (Bellibaş et al., 2021a). This theory of leadership entails the leader offering support and guidance to the teaching personnel with an aim of enhancing teacher performance. These leadership practices can result in a rapid and sustained improvement in student performance by finding out where the staff require support and then mobilising the staff to use these initiatives to build student coping skills. Thus, such support is helpful for school leaders to guarantee that there is a continuous and progressive effort to enhance resilience in all students and the whole school population. Last but not least, school leaders can ensure that teachers have a chance to reflect on their practice and to consider the literature on student resilience.

In this way, school leaders can foster a culture of professional practice that is underpinned by critical thinking and research that has the potential to enhance student resilience. This means that school leaders should be prepared to apply their understanding, practices, and approaches to address both the immediate and future requirements of students and the school community. According to Freund and Carmeli (2003), school leaders ensure and coordinate human resource of the whole school in order to meet certain goals. The authors also argue that the attributes which used to define successful school leadership are important but insufficient to sustain a good school in the future (Leithwood & Sun, 2012).

Adaptive leaders meet the conflicting demands by generating new solutions (Chughtai et al., 2023) and effectively manage the challenges of educational contexts by appreciating the complexity (Akbar et al., 2024). They are, therefore, willing to change, ready to let go of ineffective practices, and have the creativity to look beyond conventional wisdom. Adaptive leaders use a cyclical approach, implementing possible solutions, assessing the results, and modifying them if necessary (Holden et al., 2021). In their leadership, they ensure that they have a proper communication channel in order to ensure that all the members are in agreement with the intended goals and objectives even if they seem to be conflicting. They know that resilience is key, and they ensure that the team members are well prepared to handle frustration and see the challenges as something positive that can be turned into learning experiences.

Also, adaptive leaders effectively manage competing demands by assessing their relevance to school goals and use delegation to ensure that others engage actively in the problem-solving process (Pak et al., 2020). They are also good in negotiations and diplomacy to ensure that the conflicting demands are met and that everyone is informed of the decisions that are made. By employing these effective strategies, adaptive school leaders turn the possible conflict of multiple expectations into a catalyst for change and school improvement, illustrating their capacity to understand the multifaceted nature of school leadership (Fernandes et al., 2023). Therefore, if an educational system is built on the principles of shared leadership and adaptive culture, the end product is a strong, active learning community that can meet the needs of the wider society as well as the particular needs of its members.

Creating a Supportive and Inclusive Learning Environment

To foster a positive and non-discriminatory learning culture, leaders have to use contemporary strategic leadership approaches that are preventive. This change is important to make sure that everyone can do well in today's society and education system (DeMatthews et al., 2021).

Leaders should purposefully work towards the adoption of person-centered strategic leadership whereby a clear plan of how to transition from the autocratic leadership type that is steeped in discipline and instruction in a traditional setting is put in place (Masimula et al., 2020).

However, there are other strategies which should also be put in place to ensure that learning environment is supportive and inclusive such as distributed leadership. The use of this approach fosters active leadership, teamwork, and shifts the leadership style to the transformational leadership (Bellibaş et al., 2021b).

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This type of leadership directs the transformation of educational contexts in accordance with the visions and policies of leaders, guaranteeing that people have access to an accepting and welcoming educational environment. The measures that have been used in the process of facilitating these changes are very important in the development of this culture. In the scientific context, an up-to-date, supportive, and open-minded learning environment entails embracing technology such as an adaptable curriculum and teaching plan and a real-life approach to resource sharing among teaching staff. These changes are crucial to transform the leadership practices in the educational societies across the globe.

Implementing Social-Emotional Learning Programs

In schools, for instance, Social-Emotional Learning (SEL) programs act as a crucial asset in strengthening the students to deal with different problems in life (Parker, 2020). First of all, these programs foster the development of self-identity among students and this makes it easier for the students to identify their moods, abilities and failures. This aspect of self-awareness is important since the students should be able to identify areas that they need to improve on and how to do so.

Another key component of SEL is self-management skills where students are empowered on how to manage their feelings and conduct (Gimbert et al., 2023). This includes the acquisition of coping strategies such as: coping skills, self-regulation, and inherent drive that are necessary for overcoming the obstacles of life. Students also become more socially sensitive as they learn how to appreciate other people's opinions and emotions (Paolini, 2020). It is also important to note that such relationships can be of great benefit to the students emotionally and physically in times of need thus being a safety net to the students. SEL also improves students' interpersonal skills, thus enabling them to form good relationships when faced with difficulties. SEL programs in the domain of decision-making assist learners to make right decisions with regard to ethical and safety measures as well as social standards to address any challenge that may arise (Ramirez et al., 2021).

Students are required to set their goals, both personal and academic, and strive to achieve them no matter the circumstances. The identification of the main characteristics of resilience as the ability to develop perseverance and focus on distant goals. SEL also involves problem solving, which is a process for which students can be taught systematic strategies to address challenges and overcome them creatively and assertively (Ballon, 2022). Another element of SEL is the students' beliefs which include the notion that failure should be regarded as a temporary annoyance rather than a long-term problem. This paper has also noted that while some students are naturally resilient, others can be empowered through coping strategies that are learned through SEL and thus, resilience is not an innate characteristic. Last but not least, SEL contributes to the creation of a positive school climate where students are appreciated and encouraged to grow and develop, and therefore they are more likely to take risks and fail.

Providing Professional Development for Teachers

Providing educators with the necessary skills to promote resilience in students is a complex undertaking that requires a focused approach to professional development and support. The first step is to give them a deep understanding of SEL so that they can effortlessly integrate resilience-building skills into their everyday teaching (Puza, 2021).

Teachers should also paint the picture of resilience by coping and coming up with ways of solving difficulties, flexibility and positive attitudes when faced with challenges to the students. Some of the workshops that are used in teacher training to enable them address issues to do with the management of the class can assist in creating a safe space for the students to practice and learn from their mistakes and this is crucial in the process of building resilience. However, teachers are not given guidance on how to adopt and integrate the concepts of resilience and SEL into their teaching plans and practice, therefore it is vital to do so. Therefore, it is necessary to paid attention to the development of listening skills and the ways of communication of a teacher, because these skills are essential for the support of the students' mood and the development of their problem-solving skills (Qobilovna, 2023).

Building empathy is also important as it will help the teachers to have a good relationship with their students, which will create a good environment for the students to share their problems with their teachers (Warren, 2017). Informing the teachers on ways

to cope such as mindfulness, stress management, etc. provides the teachers with more tools that they can pass on to their students. In addition, problem solving is something that can be explained by how one can break down various activities and reflection which is the process of learning from all the solutions that are generated. However, it is also crucial to consider the element of self-empowerment of students as another factor that can be cultivated through giving the students the ability to manage their learning, choices, and decisions, which are all part of the resilience building process. One more factor is the collaboration among teachers and what is more, when teachers are working in one team, they can exchange their experience, their ideas and, which is more important, they can learn from each other.

This paper also reveals that, lifelong learning plays a significant role in ensuring that educators are conversant with current literature on resilience, teaching and child development. Lastly, teachers should also know how to assess the level of resilience in learners as well as how to provide feedback to the learners without undermining their morale. It thus means that teachers are the architects of resilience who create classrooms that not only impart knowledge but also shape the character of students for the better to face any challenges that life may present to them.

Collaborating with Community Partners

The most important outcome of ensuring collaboration with community partners is the establishment of a collaborative leadership model between the school, families, and the community partners (Jung & Sheldon, 2020). This assures the connection between involved individuals and the community is strengthened and provides a platform for common aspiration. School leaders and the teacher resilience initiative are the key components in the success of developing a collaborative nature of student resilience (Kangas-Dick & O'Shaughnessy, 2020). These leaders provide the fundamental impetus and direction of the program by steering student affairs towards proposed resilience and protection programs.

The teachers assist in formulating the strategies stipulated by the leaders within a more focused and elaborate plan to target the student population. The concept of identifying 'resilience partners' who focus on contributing to knowledge and innovation can only be achieved through visible and effective collaboration. Essentially, this role involves creating a consented environment for program implementation through regular dialogue with the identified partners. These leaders help in galvanizing community support from the partners and link their practices and experience with changes and innovation strategies. A continuous performance improvement strategy is used to evaluate the effectiveness of the staff and resilience programs.

Community partners mainly focus on focusing and enhancing knowledge and innovative aspects in promoting resilience in students. Such knowledge is disseminated to the respective schools and families for the improvement of the students and to engage the community towards resilience programs. However, the leader provides stewardship in developing these partnerships by setting out a well-defined plan on cooperation and designating responsibilities (Groulx et al., 2021). A monitoring and evaluation framework helps leaders in understanding the success of the collaboration with the resilience partners and identifying the areas that may require change and investment. Such continuous cycle for improvements consolidates the efforts and helps in maintaining a community of knowledge through research, innovation, and resilience improvement. This involves gathering information from different sources and engaging in feedback for sharing it with the leaders, teachers, and the community at large. This is a prerequisite to ensure that knowledge and practices are disseminated effectively so that it gives impetus to resilience in students along the chain of development.

Well-documented assessments and reports regarding the progress of resilience programs and studies associated with fostering resilience to school-going children (Siu et al., 2014). All the community partners' knowledge and experience are systematically documented to help in knowledge creation and later, dissemination to other pending partners. Through the use of up-to-date documentation and presentations, leaders are able to improve on fostering continued and valuable collaboration with the resilience partners. Such evidence-based practices and experiences from the community partners lead to the creation of a shared pool of knowledge which can be used by varying leaders to promote innovation and resilience in students.

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Findings

In this study, we examine how school leaders can enhance student resilience through complex adaptive leadership approaches. In Table 1, the results of this study are presented in comparison with previous studies and the related literature is included for each finding:

Table 1. Findings of the Study

Aspect	This Study's Findings	Previous Research	Theoretical Connection
Adaptability	School leaders swiftly adapt to changing educational needs, enhancing student success and school climate.	Gu and Day (2013) emphasize adaptability in school leadership roles in enhancing educational outcomes. Marzano, Waters, and McNulty (2005) show how leadership flexibility correlates with student achievement.	Meadows (2009) and Holland (1998) both emphasize the adaptability and flexibility inherent in complex systems, noting that such systems are dynamically capable of self-organization and responding to changes in their environment. This conceptualization is central to understanding how complex adaptive systems operate, making adaptability a key attribute that allows systems to evolve and thrive in varying conditions.
Collaboration	Leaders promote teamwork and collaboration, creating a supportive school environment where staff and students thrive.	Bryk and Schneider (2002) highlight the importance of relational trust and collaborative practices in schools. Sergiovanni (1994) underscores the importance of building community through shared values.	Collaboration is supported by adaptive leadership to enhance systemic interactions and collective capacity (Heifetz, Grashow, & Linsky, 2009).
Positive School Culture	Leaders create environments where students feel safe and valued, supporting resilience development.	Steward (2014) discusses how emotional resilience in school leadership contributes to a positive school culture. Schein (2010) discusses how leadership can shape and sustain positive organizational cultures. Deal and Peterson (2009) focus on how leaders can cultivate positive cultures through symbolic leadership.	A positive school culture is central to complex adaptive leadership, facilitating ongoing development (Cameron & Quinn, 2011).
Learner-Centered Leadership	Focuses on the well-being and needs of students, promoting their independence, confidence, and self-efficacy.	Leithwood and Beatty (2008) argue for putting student needs at the forefront of educational leadership. Mulford (2003) shows how leadership that involves students in decision-making processes enhances educational outcomes.	Lewis, Perry, and Murata (2006) offers a detailed view of how adaptive practices in educational leadership can foster an environment that prioritizes student learning and teacher development, resonating with the learner-centered leadership approach.
Professional Development	Continuous training for leaders to enhance their ability to support resilience-building interventions.	Darling-Hammond et al. (2007) underscore the impact of ongoing professional development on effective leadership. Spillane, Diamond, and Burch (2004) discuss the importance of professional development in building leadership capacity.	Professional development is crucial in complex adaptive systems for maintaining flexibility and growth of leadership competencies (Fullan, 2007).
Integration of Resilience	Developing a shared vision and supportive structures to foster resilience across all school activities.	Kowalski and Loretto (2007) discuss the integration of resilience strategies into school policies and practices. Hargreaves and Fink (2006) discuss sustainable leadership that embeds resilience practices.	Systemic integration of resilience practices is a hallmark of complex adaptive systems, enhancing the school's capacity to manage challenges (Holland, 2006).

This research confirms that CAS theory is applicable and valid within the field of educational leadership. It outlines how principals can develop proactive and adaptable strategies to address the challenges that they encounter.

Adaptability: Good school leaders are therefore in a position to be able to manage the various facets within a school system because the school system is a system. That is why they are able to meet the needs of students and employees prior to their occurrence. This should assist in the development of organizational culture of change and increase organizational agility, in addition to preparing the students for the same.

Collaborative Skills: These leaders ensure that there is a focus on the aspect of team work and make sure that there is the building of the organizational culture that promotes team work. Therefore, they create the spirit of unity among the teachers and other staff members and everyone has someone they can run to. This creates a good culture in the school and leads to a stable school community.

Commitment to Positive School Culture: The complex adaptive leaders are committed to ensuring that learning institutions remain safe for the learners. This is because they ensure that the learners are appreciated and safe, which is the foundation of the development of resilience. Therefore, a positive school culture is crucial as it provides a good environment where students can learn from their errors and progress with the experiences they undergo.

Learner-Centered Leadership: The third important finding of the study is that learner-centered leadership is effective in improving resilience. This is due to the fact that the strategy applied in this approach focuses on the welfare of the learners as the prime consideration in the learning process. The learner-centered leaders foster safety on the physical and psychological levels, positive social and emotional status, and positive attitude. These leaders help them to be more self-reliant by encouraging the students to participate actively in the learning process and make them responsible for their learning which are aspects of resilience.

Professional development: The study also found out that professional learning of school leaders is an ongoing process. This clearly means that leaders should be trained from time to time in order to equip them with knowledge on how to provide support in promoting resilience. These programs should seek to enhance leadership skills, group cohesiveness and unity within the school. Therefore, school leaders can improve students' resilience skills by improving their leadership skills.

Integration of Resilience: The study also reveals the need to ensure that resilience is integrated in all the learning activities through a whole school approach. This is the identification of the goals that are necessary for building the organizational resilience, the structures that have been put in place to support these goals and the development of a network of support. It unifies all the stakeholders and their activities within the school and also provides a working definition of resilience and how it can be nurtured. The different facets of the school, including the teaching-learning process, curriculum, and policy, also have systemic supports that strengthen the school's ability to handle the challenges. It involves the development of healthy interpersonal relationships between students, teachers, other staff and the community to foster a support system to help students in their challenges.

Discussion and Conclusion

The use of CES in schools can also enhance the delivery of Evidence-Based Interventions (EBI) such teacher training programs and resilience classes. The current paper has therefore aimed at presenting a synthesis of the current literature on the concept of complex adaptive systems and how it is being employed to build the effectiveness and results of psycho-social interventions in schools. In the present, education is characterized by reason as the foundation for decision-making and actions within organizations (Cheung, 2021).

This view is grounded on the tenets of the knowledge-based view of the firm and the knowledge management process. It is recommended that further work be done within the framework of the presented concept based on the CAS theory to enhance the current understanding of schools as learning organizations and to design a strategy for change with the introduction of new

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practices. But as noted by Harris in 2008, there is still a question on how the leaders such as the head teachers or principals and the teachers themselves can get the right knowledge and training to support the use of evidence based strategies in their practice. Thus, without such expertise and leadership, there is a risk that 'top-down' policy directed measures will erode teacher professionalism and can prevent the possibility of successful reform and improved pupil achievement. This leads to further important questions that could be discussed in relation to this and these could be usefully located within the framework of complex adaptive systems.

Specifically, what can be done to support educational leaders to enable the transfer of knowledge and thus create a truly bottom-up and emergent process of positive change within the school as an organization? This knowledge will mean that excellent training has to be given to the educational leaders but also to the teachers as change agents and for those people involved in the delivery and assessment of evidence based practices. Therefore, this paper should be viewed as a useful contribution to the current body of knowledge and research in this area. Owoeye et al. (2020) has also noted that there seems to be a lack of theoretical studies on how EBP can be effectively implemented in schools. Hence, integrating the theoretical framework of psychological intervention with the theory of complex adaptive systems, the ways of enhancing the coherence and integration of the process of how the potentialization of psychological intervention can enhance the student's well-being and learning outcomes are presented. Our findings, therefore, validate the propositions about the role of complex adaptive leadership in increasing resilience in schools. Therefore, the flexibility of leaders influences the processes occurring in schools and prompts immediate responses to the challenges that education faces, which is in line with the principles of resilience in students and teachers.

Thus, it is crucial in designing an environment that would assist students to overcome the challenges and as pointed out by Gu and Day (2013) adaptability is crucial in educational leadership to enhance student performance. While flexibility is generally viewed as a desirable attribute, there are some studies that show some drawbacks of it. According to Waters, Marzano, and McNulty (2003), while flexibility is desirable, it leads to frequent changes in leadership, which in turn does not foster the development of resilience in school communities in the long run. Another factor that was found was collaboration. Therefore, principals and teachers who support collaboration and collective accountability foster trust and positive results in their schools, which positively impact students' self-organisation and academic achievement. This is in agreement with Bryk and Schneider's (2002) observation of the impact of relational trust in schools. Instead, as affirmed by Harris and Jones (2017), overemphasizing teamwork may lead to undermining such principles as accountability and role confusion in decision making, especially in situations that require immediate intervention.

Another finding was the positive school culture that emerged as a result of the application of complex adaptive leadership. This is in agreement with Leithwood and Beatty (2008) who argue that leadership that is based on character strengths enhances the school climate. Nevertheless, some scholars, including Johnson (2011), note that focusing on the positive culture may lead people to overlook other issues in schools that need to be addressed by more stringent written policies. In conclusion, the current research adds to the body of knowledge on complex adaptive leadership in educational resilience by elaborating on the leadership behaviors and their multiple outcomes.

Limitations

It's crucial to recognize the study's limitations, despite the insights provided by the exploratory method. The focus on a specific group and the use of different sampling with qualitative and quantitative could have produced much better outputs. Artificial intelligence (AI) was utilized for the academic editing of this study, to ensure that it is written in a scientific tone, and to increase fluency and comprehensibility. "Deepl" was used in the translation of the article.

Suggestions

Longitudinal research can be carried out to monitor the impact of adaptive leadership practices on the resilience of students in the long-term. The purpose of this research is to examine how cultural differences influence the delivery and success of

resilience interventions. It aims at exploring how cultural contexts influence the feasibility and effectiveness of interventions aimed at increasing resilience in different populations. The analysis will explore aspects of culture and culture's influence on resilience strategies to enhance understanding of customization and localization of resilience. Research can be done with the help of psychology, education and social sciences to obtain more specific information about resilience and leadership practices.

Declarations

Ethics committee permission is not required.

Conflicts of interest/competing interests

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Author contributions

Both authors took equal and joint responsibility for conducting the research, writing the chapters and preparing the research for publication.

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