DOI: https://doi.org/10.61707/g3c11530

Problematising the Hyper-Inflationary Context and Teachers in Zimbabwean Schools: A Scoping Review

Albert Mufanechiya¹, Matseliso Mokhele Makgalwa²

Abstract

Teachers are critical pillars of any education system. If teachers work in unstable economic environments, their responsibility and accountability to ensure that learners learn are compromised and reduced. This paper aimed at synthesising existing literature on how much has been studied on teachers' coping strategies in the hyper-inflationary context in Zimbabwe. The documents used in the study were purposefully sampled from Google Scholar and Freefullpdf as other data bases were unable to provide results on the Zimbabwean context. The review found that teachers suffered substantial financial and material losses, experienced stress and have not put in their best in the education of learners. The study concluded that the hyper-inflationary dynamics remains the stumbling block to optimising teaching and learning with severe output implications for both teachers and learners. We recommend that an empirical study be conducted on the lived experiences of learners on the effects of hyper-inflation in Zimbabwean schools.

Keywords: Coping Strategies, Economic Crisis, Educational Sustainability, Hyperinflation, Teaching and Learning

INTRODUCTION

Zimbabwe, with its rich educational history, has grappled with political instability and hyper-inflation since 2000 and has failed to adequately support the education system (Raftopoulos and Pilossof, 2021). The hyper-inflationary situation has resulted in low remuneration levels for teachers and poor teacher-state relations, factors that have contributed to a degradation of teaching as a profession. The high social status that once made teaching one of the coveted professions in Zimbabwe, has significantly diminished. Zimbabwean teachers have experienced a profound erosion of responsibility, accountability and leadership within their professional learning communities in schools (Sahlberg, 2013) as a result of poor remuneration and working environments. Teacher salaries and conditions of service during hyper-inflation episodes merits closer attention as they have the potential to exacerbate social inequalities and educational disparities among the learners and impact on the quality of their future life (Toropova et al., 2023). Consequently, a difficult working environment characterised by low salaries is a significant barrier to retaining teachers (Inter-agency Network for Education in Emergencies (INEE) (2022)). Nevertheless, as underscored by Esmaeilbeygi et al. (2024) and Mpate et al. (2023) teachers remain indispensable to the success of any education system.

The 1966 UNESCO-ILO recommendations on the status of teachers recognise that the realisation of Article 26 of the Declaration of Human Rights which asserts the fundamental right to education, relies heavily on and is influenced by the rights of teachers to a fair compensation (Henderson, 2023). However, in national documents of most countries, Zimbabwe included, the emphasis on teachers' rights to fair remuneration and good working conditions is notably inadequate or even completely missing. As a result, teachers are regarded with less value and respect in their professional roles as there is no policy that protects them.

Teachers' remuneration constitutes the largest single expense in formal education, significantly influencing the attractiveness of the teaching profession and essential for effective teaching and learning (Diagne, 2024; Maalouf and Baradhi, 2024). In addition, Yurtseven (2024) observed that labour represents the primary cost for educational institutions. A motivated teaching workforce is essential for optimal teacher performance across all education systems. Without this motivation, the ability to provide educational services are limited as teachers face widespread demoralisation resulting in a significant exodus that ultimately compromise the quality of

¹ UFS Postdoctoral Fellow. Orcid: https://orcid.org/0000-0001-9628-3356. Email: mufanechiya66@gmail.com

² University of the Free State. Orcid: https://orcid.org/0000-0003-0003-9530 Email: MokheleML@ufs.ac.za

education (Tam and Huu, 2024; Yurtseven, 2024). In order to enhance the work ethics and psycho-social aspects of teachers, there is a critical need to support teachers and their work environments by addressing the remuneration, working and living conditions, and the resource side of teaching.

The review aims to provide an overview of teachers' coping strategies in hyper-inflation Zimbabwean contexts as portrayed in empirical studies. Through this study we note the significance of our contribution lies in unpacking and creating a rich foundation for understanding the Zimbabwean teacher context regarding their experiences during these hyper-inflation periods. The Zimbabwean hyper-inflation story, and how teachers have managed classroom teaching and learning during these periods have not received much global research attention, but some significant national debate and research. Furthermore, the relevance of the review is in the dearth of such reviews in Zimbabwean education literature.

Problem Statement

There is a growing concern on the teachers' salaries and conditions of service and its impact on the education system in Zimbabwe due to persistent high inflation. Researchers have raised serious challenges teachers have faced during the hyper-inflation periods, and yet there is a dearth of information on sustainable solutions. As Ngwenya (2021) underscores, the remuneration of Zimbabwean teachers have remained stagnant for years, while cost of essential commodities soar daily and has increased teachers' stress, and reduced their commitment to duty. The hyper-inflation has shaken the foundation for access to quality educational experiences among learners (Brandt and Lopes-Cardozo, 2023). When teachers are in such a situation, they lose focus, self-concept and professional identity which leads to the decline of educational standards. Analysing the impact of the economic crisis on teachers' work and lives can provide policymakers with insights for developing effective strategies that better support teachers, which is vital for preserving educational quality and stability within the sector. Thus, this study aimed at synthesising existing literature on teachers' personal and professional challenges, and coping strategies occasioned by hyper-inflation.

METHODOLOGY

We adopted a scoping review to describe teachers' challenges and coping strategies during hyper-inflation periods in Zimbabwe. The review offered a user-friendly method for accessing evidence and data, as well as for identifying, charting and reporting information effectively (Peters et al., 2021). We opted for a scoping review because the challenges of Zimbabwean teachers due to hyper-inflation have been a persistent phenomenon and a gap exists in knowledge in identifying what teachers have done and what government and other education stakeholders need do. We utilised Arksey and O'Malley's (2005) five stage framework which includes (a) defining the research question, (b) identifying relevant literature, (c) selecting studies, (d) mapping the data, (e) summarising, synthesising, and reporting the results (Westphaln et al., 2021) was utilised during the study. We found this approach applicable when conducting this scoping review as it allowed us to synthesise knowledge that identify trends and gaps within existing knowledge base (Westphaln et al., 2021) regarding teachers' coping strategies during hyper-inflation periods.

Specifying the Research Question

In this descriptive analysis, the aim was to explore strategies employed by teachers to cope with hyper-inflation in Zimbabwe. We used Population, Exposure, Outcome (PEO) framework to develop the research question (Aboagye et al., 2021). In utilising PEO in the study, the population was defined as teachers and these referred to those at both primary and secondary levels. In terms of geographical space, the studies were from urban and rural schools. The exposure included evidence from studies from across Zimbabwe and where different methodologies were used. The primary outcome of the study was the survival strategies utilised by teachers. Consequently, the research question posed was, What coping strategies do Zimbabwean teachers employ during periods of hyper-inflation?

Identification of Relevant Literature

We relied on Google Scholar (7 studies) and Freefullpdf.com (2 studies) after backward and forward searches to identify relevant studies, as there was a paucity of studies from other credible data bases on coping strategies

by teachers during hyper-inflation in Zimbabwe. The search engines were customised with the year search from 2000-2024, as we traced the evolution of the challenges and their persistence. We developed an inclusion and exclusion framework by screening research titles, abstracts and key words. Key words were Zimbabwe, hyper-inflation, economic crisis/instability, teachers/civil servants working conditions, coping/survival strategies and unstable education environment. The inclusion criteria were articles published in journals, book chapters, seminar papers and theses written in the English language. The two data sources resulted in nine eligible studies for data extraction. The full texts were then obtained for further analysis for their quality. All the studies included in the review used the qualitative methodology to have better insights on the problem. The publications were not evenly distributed though, with a few in the late 2000, rose in 2021 one as recent as 2024 highlighting the currency of the problem.

As for exclusion, all articles not in peer-reviewed journals, blogs, and print media content were omitted to ensure credibility of the data. We specified the country of the publications as we wanted to limit our focus of study to be the Zimbabwean context given its uniqueness in terms of the persistent hyper-inflationary macroeconomic environment, its impact on teachers and the education system. The researchers worked independently on the eligible studies and a comparison was made. This permitted a more precise interpretation of the national teacher problem, and broadened the evidence for better interventions.

Inclusion and Exclusion Criteria

We utilised PRISMA to assemble and select a database of articles relevant to the Zimbabwean context from scholars regarding how teachers have navigated challenges caused by high volatility.

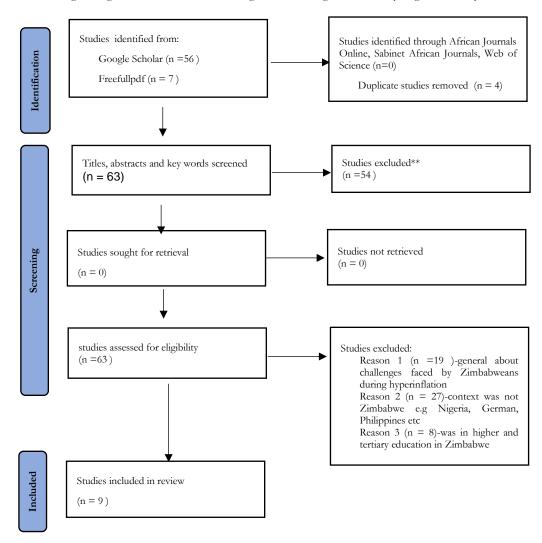


Figure 1: Identification of studies through databases

Data Charting and Summary

We used the data from the PRISMA flow chart for the scoping review. As presented on Table 1 below, we looked at the author of the article, the year of publication, the title of study, the research approach and the main findings. We then analysed the findings using content analysis to develop themes for the study.

Table 1. Included studies and data summary

Author(s)	Topic	Methodology	Findings
Chagonda, T. 2010	Zimbabwe's casino economy: The contrasting fortunes of teachers and bank tellers in the pre and post dollarisation eras	Qualitative	 Primary and secondary educators responded to the erosion of incomes as a result of hyper-inflation by going to the diaspora or joined Zimbabwe's ever-growing speculative informal economy. Teachers went across the border to trade as one of their survival mechanisms.
Musekiwa, N. 2014	Teachers' coping strategies in Zimbabwe during the 2000-2008 socioeconomic crisis	Qualitative	 Teachers embraced varied coping mechanisms ranging from moonlighting, exiting, voicing and producing other services not provided by the state.
Bakasa, E.M. 2016	An exploration of the livelihood and coping strategies of urban teachers in post-economic crisis Zimbabwe 2009-2015	Qualitative	 The main socio-economic problems that teachers faced during hyper-inflation were poor remuneration, poor living conditions, poor working conditions. To sustain themselves teachers used the five identified forms of capital namely; human, financial, physical, natural and social-that is anything that could help them survive
Zikhali, W. 2017	Livelihoods and coping strategies adopted by civil servants in the current economic crisis: A case of Bulawayo, Zimbabwe	Qualitative	 Teachers as civil servants, faced socio-economic challenges which included poor salaries, poor living conditions, poor working conditions and general demotivation. To cushion themselves from the challenges educators did extra work, migrated to other countries and leased their houses, borrowed money to boost their income, did farming, illegal gold mining activities and created some social group networks.
Dube, B. 2021	Incapacitated but bricolising: The ambivalence of the teaching profession in times of crisis in Zimbabwe	Qualitative	 Teachers bricolised in their quest for survival - some were involved in illegal mining activities for survival, others buy and sell goods, they left their teaching responsibilities and the education system in Zimbabwe was on the brink of collapse.
Moyo, S.M 2021	Experiences and survival strategies of rural teachers during Zimbabwe's economic crisis (2016-2020): A case study of Zaka district primary and secondary school teachers	Qualitative	 ■ Zimbabwean rural teachers faced numerous problems. These included poor living and working conditions, cash shortages, inadequate salaries, and limited teaching resources. ■ The teachers adopted a number of coping strategies such as cutting down on expenditure, decreasing the quantity of food and the number of meals consumed per day, farming, piece jobs, and sought opportunities in the informal sector
Ngwenya, V.C. 2021	Job performance: Working conditions of urban teachers in Zimbabwean schools	Qualitative	● Enhancing teachers' working conditions would significantly elevate their job performance ● Many teachers expressed profound dissatisfaction with their inadequate remuneration. This insufficient pay failed to meet their basic physiological needs, and consequently undermined their effectiveness in the classroom and teachers used farming, extra lessons and buying and selling to survive.

			 Under such conditions, the overwhelming teacher-learner ratio, coupled with demanding curriculum expectations placed excessive strain on teachers, particularly in the face of scarce resources.
Katsande, T.J. 2022	The effects of economic instability on teachers in decentralised secondary schools in Zimbabwe: A case of Mashonaland Central province	Qualitative	 The hyper-inflation negatively affected teaching and learning in Zimbabwean secondary schools It affected individual teachers psychologically as social status was battered Teachers migrated to other countries, involved in gold mining, vending, cross border trading and transferring children to cheaper schools
Mazambara, R. and Sepeng, M.S. 2024	School heads experiences in motivating Zimbabwean rural teachers in an unstable education environment	Qualitative	 Extremely low salaries have created significant challenges for teachers leading to increased and uncontrolled absenteeism and a rise in industrial actions. Student performance dropped significantly from 52% in 2018 to 36% in 2020. Consequently, school heads struggled to motivate teachers to remain committed to their responsibilities.

FINDINGS

The study served to deeply interrogate ways in which teachers managed situations and also build an understanding of their individual and contextual coping strategies during hyper-inflation periods in Zimbabwe. The studies cited explored the commonalities and differences on a wide range of measures taken by teachers in Zimbabwe to manage strain, stress, and resource mobilisation to provide for themselves in the hyper-inflationary context and mitigate its impact.

The researchers revealed that Zimbabwean teachers did not receive the necessary interventions and support they needed during these episodes in order to endure, cope and manage hence they had to find means to improve personal livelihood circumstances during the turbulent times (Dube, 2021; Moyo, 2021; Zikhali, 2017; Bakasa, 2016; Musekiwa, 2014; Chagonda, 2010). They were left to their own devices. To limit the impact of the hyper-inflation, Zikhali (2017) reported that teachers had shared their challenges and experiences with their counterparts which gave them a supportive network.

Furthermore, in order to adapt to such crises, large class sizes and curriculum demands were reported as a burden to teachers as they wanted more time to find means of widening their financial resource base (Moyo, 2021; Ngwenya, 2021). Teachers had to modify their approaches to work, adapting their teaching to the challenges posed by hyper-inflation. Their concerns shifted from professional duties and responsibilities to matters related to their personal survival beyond the classroom (Katsande, 2022; Moyo, 2021, Dube, 2021). It was apparent that teaching quality in Zimbabwean schools which was supposed to be safeguarded by interventions showed a decline as a result of a culture of teacher absenteeism, lack of motivation necessitated by low salaries, poor working conditions and these had negatively impacted on teacher effectiveness and quality of student learning experiences (Dube, 2021; Mazambara and Sepeng, 2024). It was also unfortunate that teachers ended up with a battered social status (Katsande, 2022).

The hyper-inflation had resulted in a situation where teachers also worked in resource-constrained schools (Ngwenya, 2021; Dube, 2021; Zikhali, 2017; Bakasa, 2016). The fact that some teachers decided to migrate to other countries (Katsande, 2022; Zikhali, 2017; Chagonda, 2016; Musekiwa, 2014) where their skills was better appreciated was not surprising.

DISCUSSION

We discuss the following themes that emerged from literature on hyper-inflation in Zimbabwe and its impact on teachers; compensation structure for teachers, quality education, and teacher migration.

Compensation Structure for Teachers

The compensation structure for teachers should acknowledge and reward their contribution to knowledge and skills they provide to the nation so that they can teach with interest, motivation and commitment. The successfulness of teachers' professional roles and meaningfulness depend on their experiences of job satisfaction, motivation and fewer complaints. It is within this context that Ngwenya (2021) notes that as Zimbabwean government struggles to maintain a competitive remuneration structure, often resorting to temporary solutions, leads to decreased morale, poor learner performance and attrition among teachers (Mazambara and Sepeng, 2024). Important considerations must be made to protect the overall devaluation of the teaching profession as failure can lead to lower teacher retention rates and a decline in the attractiveness of teaching as a career further destabilising the educational landscape. The salaries and working conditions for Zimbabwean teachers should be designed in such a way that they allow teachers to focus on the professional responsibilities which is enhancing effective teaching and learning. The situation often mainly attempts to address the explicit and more often ignoring the implicit stress challenges faced by teachers in the profession (van Vianen, 2018). The results from studies show that the poor compensation system for Zimbabwean teachers can inform policy debates, educational reforms, and strategic planning within the education system as this affects the overall teacher well-being and educational quality.

Quality Education

The goals of achieving quality education in line with Sustainable Development Goal Number 4 were missed during the episodes of hyper-inflation in Zimbabwe. This can be explained within the context of teachers being exposed to a myriad of challenges. To Dube (2021) these observations suggest a declining education system and the need to build resilience to educational shocks and develop an understanding of underlying causes. Scholars (Mazambara and Sepeng, 2024; Zikhali, 2017) have raised the concern that teachers grappling with plummeting real income, are forced to divert their energies towards survival rather than instruction. Consistent with research by Dube (2021) and Mazambara and Sepeng (2024), this neglect raises a critical moral question as the decline in educational quality and a drop in learner performance have negative effects on the future of society as learners are denied quality education thus perpetuating cycles of poverty.

Teacher Migration

With teachers contending with worrying conditions of service such as low wages and benefits, migration which represents a crisis driven by economic desperation and eroded livelihoods (Yurtseven, 2024) becomes a viable alternative. This supports the notion by Chagonda (2010), Zikhali (2017) and Katsande (2022) that as Zimbabwe continues to slide into the abyss of economic turmoil, teachers who have dedicated their lives to the service of future generations, find themselves compelled to abandon their teaching post in search of stability and sustenance elsewhere. The exodus of teachers not only devastates the educational landscape but undermines societal progress as well. Consequently, Katsande (2022) reiterates that the brain drain precipitated by hyper-inflation not only depletes quality and experienced teachers, but also embodies a loss of hope for learners striving to build their future. Thus, there is no education system that can succeed without well remunerated quality and experienced teachers.

Implications for Policy and Practice

A study like this can be used to provide a basis for policy insights, fill in evidence gaps and lessons learnt to support teachers, achieve and maintain learning stability in Zimbabwean schools during hyper-inflation periods. Attending to problems facing teachers during the hyper-inflation episodes is clearly a critical focus area and a political imperative as it has direct and substantial policy, budgetary implications.

CONCLUSION

In the intricate social, political and economic landscape of Zimbabwe, characterised by hyper-inflation, the necessity for effective teacher management and targeted support for their well-being has never been more critical. One of the underpinning issues in this study is that it is indisputable that teachers are the backbone of any education system and when their physiological needs are threatened, it destroys the very foundation of a

quality education system which is teaching and learning. The effects of hyper-inflation on teachers and the education sector are profound, highlighting urgent need to monitor, assess and reform the way teachers are provided for during such the crises. Taken together, studies cited suggest a commitment to maintain teachers motivated and well-resourced can play a key role in stabilising the education system in Zimbabwe, especially during high inflation periods for societal development in the current knowledge economy.

The national persistence of hyper-inflation cycles in Zimbabwe must embolden the case for coordinated action to respond to challenges faced by teachers. What is most significant about the study has been the increased need for the Zimbabwean government to be more proactive in developing policies and finding lasting, effective and sustainable interventions to help teachers navigate the challenges of hyper-inflation as the majority of the studies were suggesting transient and uncoordinated solutions. In crises moments like these, all educational stakeholders, government, humanitarian organisations and donors must take a principled position of solidarity with Zimbabwean teachers. This is against the backdrop that as teachers are placed under severe disadvantage, strain, uncertainty and their rights significantly undermined by these extreme hyper-inflation conditions, it's the children who are denied access to quality educational services.

Limitations of the Study

The use of two data bases may have left out some potential online studies on hyper-inflation and teacher coping mechanism by Zimbabwean teachers. Furthermore, only incorporating the Zimbabwean context in this review may have limited the scope for comparison with a possibility of bias. However, future reviews may address these limitations by including studies from other contexts neglected by this review.

Conflict of Interest

Both authors declare no conflict of interest.

Funding

No funding was received for this study.

REFERENCES

- Aboagye, E., Jensen, I., Bergström, G., Bramberg, .B., Pic-Espinosa, O.J. and Bjorklund, C. (2021). Investigating the association between publication performance and the work environment of university research academics: a systematic review. Scientometrics, 126: 3283–3301. https://doi.org/10.1007/s11192-020-03820-y
- Bakasa, E.M. (2016). An exploration of the livelihood and coping strategies of urban teachers in post-economic crisis Zimbabwe 2009-2015. University of Pretoria, South Africa, ProQuest Dissertations and Theses, 2016. 307122777
- Chagonda, T. (2010). Zimbabwe's casino economy: The contrasting fortunes of teachers and bank tellers in the pre and post dollarisation eras. Seminar Paper.Hosted by the Department of Sociology and the Department of Anthropology & Development Studies 1-17. https://www.uj.ac.za/wp-content/uploads/2021/10/chagonda-2010-zimbabwe-casino-1-1.pdf
- Dube, B. (2021). Incapacitated but bricolising: The ambivalence of the teaching profession in times of crisis in Zimbabwe. Multicultural Education, 7, (10): 729-737 https://doi.org/10.5281/zenodo.5606085
- Esmaeilbeygi, H., B., Navehebrahim, A., and Abbasian, H. (2024). Evaluation of the Quality of the Elementary Education Program at Farhangian University Based on the CIPP Model. Iranian Journal of Educational Sociology, 7(1): 43-56. http://dx.doi.org/10.61838/kman.ijes.7.1.5
- Henderson, C. (2023). Teachers in crisis contexts: A forgotten factor in the right to quality education. 4 July. https://www.norrag.org/teachers-in-crisis--contexts-a-forgotten-factor-in-the-right-to-quality-education
- Inter-agency Network for Education in Emergencies (INEE). (2022). Promising practices in teacher professional development. New York, NY. https://inee.org/resources/promising-practices-teacher-professional-development
- Katsande, T.J. (2022). The effects of economic instability on teachers in decentralised secondary schools in Zimbabwe: A case of Mashonaland Central province. International Journal of Research and Innovation in Social Science (IJRISS), VI (II): 599-613. https://www.researchgate.net/profile/Tapfuiwa-Katsande/publication/359867248
- Maalouf, N.J.A. and Baradhi, R.A. (2024). The impact of the economic crisis on educational sector in Lebanon in terms of student enrollment, quality education, and teachers' motivation. Migration Letters, 21 (4): 1561-1570. https://d1wqtxt1xzle7.cloudfront.net/1118844400/8204-Article-text-21253-1-10-20240223-libre.pdf

- Mazambara, R. and Sepeng, M.S. (2024). School heads experiences in motivating Zimbabwean rural teachers in an unstable education environment. African Journal of Development Studies,14, (2). https://hdl.handle.net/10520/ejc-aa_affrika1_v14_n3_a17
- Mpate, H., Campbell-Evans, G. and Gray, J. (2023). Pre-service teachers' preparedness to teach during teaching practice in Tanzania. African Journal of Teacher Education, 12 (1): 95-120.http://www.iaset.us
- Musekiwa, N. (2014). Teachers' coping strategies in Zimbabwe during the 2000-2008 socioeconomic crisis. Mosenodi Journal, 18(1):1-10. https://www.journals.ub.bw
- Ngwenya, V.C. (2021). Job performance: Working conditions of urban teachers in Zimbabwean schools. SA Journal of Human Resource Management, 19. https://doi.org/10.4102/sajhrm.v19i0.1454
- Peters, M.D.J., Marnie, C., Colquhoun, H. Garritty, C., Horsely, T., Langlois, E. V, IILIE, E., O'Brien, K.K., Tuncalp, O., Wilson, M.G., Zarin, W. and Tricco, A.C. (2021). Scoping reviews: reinforcing and advancing the methodology and application. Systematic Reviews, 10: 263. https://doi.org/10.1186/s13643-021-01821-3
- Sahlberg, P. (2013). Teachers as leaders in Finland. Educational Leadership. https://pasisahlberg.com/wp-content/uploads/2012/12/Teachers-as-leaders-20131.pdf
- Tam, T.T. and Huu, N.D. (2024). Access to Educational Services for Children from Migrant Worker Households in Vietnam's Industrial Zones. International Journal of Religion, 5 (1): 547-556.https://doi.org/10.61707/dsywa603
- Toropova, A., Myrberg, E. and Johansson, S. (2023). Teacher job satisfaction: The importance of school working conditions and teacher characteristics. In book Mapping the Field: 15 Years of Educational Review, Volume 11 (1st Edition). Routledge.
- Raftopoulos, B. and Pilossof, R. (2021). Education in the first two decades of independence.ResearchGate. https://www.researchgate.net/publication/352480342
- Van Vianen, A.E.M. (2018). Person-environment fit: A review of its basic tenets. Annual Review of Organisational Psychology and Organisational Behaviour, 5; 75-101. https://doi.org/10.1146/annurev-orgpsych-032117-104702
- Westphaln,K.K., Wendy Regoeczi,W.,Masotya,M., Bridget Vazquez-Westphaln,B., Lounsbury,K. McDavid, L., Lee,H. Johnson,J. and Sarah, D. Ronis,S.D. (2021).From Arksey and O'Malley and Beyond: Customizations to enhance a teambased, mixed approach to scoping review methodology. MethodsX, 8: 1- 14. https://doi.org/10.1016/j.mex.2021.101375
- Zikhali, W. (2017). Livelihoods and coping strategies adopted by civil servants in the current economic crisis: A case of Bulawayo, Zimbabwe. International Journal of Humanities and Social Sciences (IJHSS), 6 (4):17-30. http://www.iaset.us
- Yurtseven Ç. (2024). Education System Resilience in the Face of Inflationary Pressures. Journal of Infrastructure, Policy and Development, 8(11): 77-68. https://doi.org/10.24294/jipd.v8i11.7768