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The Social Roots of Disciplinary Knowledge Compartmentalisation by College Lecturers and Student-Teachers in Zimbabwe

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Abstract. This study explored the social causes of lecturers' and student-teachers' fragmented use of course knowledge in the Midlands Province, Zimbabwe, to identify strategies that can promote knowledge interdisciplinarity. It is undergirded by Antonio Gramsci's cultural hegemony theory, which postulates that society uses social institutions, such as education, to perpetuate cultural domination. The study was conducted at three teacher training institutions and adopted a qualitative approach and a case study design involving 90 participants purposively sampled as the critical case. Structured interviews, document analysis, and observation methods were used to generate data. The findings are that disciplinarity, dominant, powerful subjects, and knowledge categorisation/ranking are the social forces influencing knowledge compartmentalisation by lecturers and preservice teachers. It also noted that animosity among staff members incite separate use of different forms of subject knowledge in teacher training institutions. The causes of stakeholders' fragmented use of course content were established, which should be used holistically. The study recommends promoting interdisciplinarity in college course content to enrich the ideas and experiences of lecturers, student-teachers, and other stakeholders.

Keywords: College lecturers; compartmentalisation; fragmentation; disciplinarity; social roots

1. Introduction

The Zimbabwean teacher education course is designed to prepare critical and competent prospective teachers to deal with learner diversity. The course is intended to develop pedagogical skills, rigorous content knowledge and the use of theory to guide practice (and practice to generate theory) through an array of disciplines that must all merge through interdisciplinarity. However, many teacher training institutions (TTIs) in Zimbabwe suffer from strict disciplinarity by lecturers and student-teachers who seem ignorant of the utility of interdisciplinary knowledge integration (IKI) in lectures, assignments,

examinations and academic discourse. Knowledge compartmentalisation means that knowledge about a domain comprises fragmented, separate parts, not integrated into a whole (Mandl et al., 1993).

Lecturers and student-teachers are in a dilemma of knowledge compartmentalisation as they are barred by social standards or personal choices from a holistic education, which requires a holistic teacher who can address global development challenges (Miseliunaite et al., 2022). The fragmented use of course knowledge by lecturers and student-teachers is a significant issue in education, which warrants investigation because existing research focuses on fragmentation conception and interdisciplinarity benefits in general and neglects the lecturers' and student-teachers' perspectives.

Understanding how lecturers and student-teachers use course knowledge can inform lecturing strategies and improve professional growth to deal with diverse social issues. Zimbabwean scholars seem to have noticed the relevance of interdisciplinarity but have focused on the contestation around indigenous languages versus English in the media (Mpofu & Salawu, 2018) and ICT integration (Chingarande, 2022). To address fragmentation, holistic and integrated curricula are advocated (Drake & Reid, 2020). Curriculum integration seems to be missing in Zimbabwean teacher education and this study set out to fill this knowledge gap. Thus, this study sought to establish the social origins of fragmented use of course content by lecturers and preservice teachers in the Midlands Province, Zimbabwe.

2. Theoretical Framework and Literature Review

This exploration draws upon Antonio Gramsci's (1891-1937) cultural hegemony theory, an organising force within unequal societies. Gramsci believed that ideology is decisive in maintaining the status quo (Haralambos et al., 2013; Jaques et al., 2019) as the realm of ideas important in ideological contestation because hegemony is consent supported by force (Gundogan, 2010; Winkler, 2020). Cultural hegemony is a way of implementing ideas, which in time become 'common sense', through persuasion, and ideas, that were once seen as ideas, become the norm (Dirzauskaite & Ilinca, 2017). Domination and leadership are maintained by one social group over others, using ideology or culture transmitted through social institutions to powerfully influence society's culture (Winkler, 2020), resulting in worldviews replacing each other. The dominant group convinces the subaltern to accept its moral, political and cultural values since domination and leadership are maintained through ideology or culture transmitted through social institutions to strongly influence society's cultural patterns (Syukur, 2019).

Knowledge fragmentation by student-teachers is possibly influenced by social groups that seek to exert their domination and leadership by presenting a worldview of compartmentalised subject knowledge to a society where subjects are rank-ordered. These views make this theory relevant to this research as it critically explored the social factors that discourage lecturers and student-teachers from embracing interdisciplinarity. Knowledge compartmentalisation has

become a hegemonic culture in academia because minimal effort has been put into breaking the disciplinary boundaries to create interdisciplinarity in Zimbabwean teacher education. Knowledge compartmentalisation refers to the separation or fragmentation of knowledge into isolated chunks or compartments, which makes it challenging to connect related ideas, integrate new information, and apply knowledge across subject borders and contexts towards novel creations. From a sociological point of view, social factors can lead to the establishment of cultural hegemony, as some disciplines become dominant.

2.1 Knowledge Compartmentalisation in Zimbabwe

In Zimbabwe, the Director's Circular No. P36 of 2006 prescribes a general/academic and business/commercial/technology/technical vocational curriculum (Mandiudza et al., 2013; Manenji, 2016). This circular officialised the compartmentalisation of knowledge and generated different perceptions towards different subjects. Practical and vocational subjects are considered inferior and unimportant in preference to traditional academic subjects and they are stigmatised and publicly scorned because they are perceived as representing anti-intellectualism (Chiweshe et al., 2013; Winberg & Hollis-Turner, 2021). People believe technical subject learners are less gifted and attach denigrating labels to such subjects but revere teachers who teach academic subjects (Chiweshe et al., 2013; Mandiudza et al., 2013). Accordingly, different subjects are perceived differently in Zimbabwe, from school to tertiary levels, which may promote knowledge fragmentation by lecturers and student-teachers.

The pursuit of disciplinarity is reflected by Zimbabwe's extant language policy inherited from the colonial past because English is the official language of education, business, media and government, influencing people's attitudes towards disciplinarity (Hungwe, 2007). This situation has been the status quo, providing limited support for the development of indigenous languages (Hungwe, 2007), with labels such as "marginalised languages" attached to these languages (Nhongo, 2013). Conversely, English is elevated and categorically specified as an essential entry requirement in all post-school institutions (Nziramasanga, 1999). For example, admission to higher education institutions (HEIs) requires five 'O' level passes with a Grade C or better, including English language, mathematics and science (Mangwaya et al., 2023; Mkoba Teachers College, 2019; University of Zimbabwe, 2024). This admission policy is a rational way of role selection and allocation on merit but it potentially promotes specific 'knowledges' and not others, consolidating knowledge fragmentation. Thus, to pass the 'O' level in Zimbabwe, one must pass at least five subjects, including English language, with a Grade C or better (Chiweshe et al., 2013).

Moreover, Zimbabwean students cannot proceed to higher education if they only have passes in other subjects, without a good pass in the English language (Chiweshe et al., 2013; Rudhumbu & Mudau, 2022; University of Zimbabwe, 2024). These requirements create attitudes towards different subjects in students who may eventually be in teacher colleges with disciplinary stereotypes and biases against interdisciplinarity. Worse still, the lecturers are the products of an ideologically biased system that ingrains knowledge compartmentalisation. These

hegemonic conditions cause a significant drop in enrolments, which some colleges blame on prioritising mathematics and English and compelling all first-year students to take these subjects even for programmes that may not be relevant (*The Zimbabwe Mail*, 2018). In 2018, this odd situation prompted the then Minister of Higher and Tertiary Education, Innovation, Science and Technology Development (MHTEISTD) to accuse universities, polytechnics and colleges of being inflexible and conservative institutions (implicitly, disseminating cultural hegemony) (*The Zimbabwe Mail*, 2018) that drive knowledge separation by lecturers and student-teachers. As cited in *The Zimbabwe Mail*, 2018, the Minister stated,

“If a subject or if a qualification really requires people to calculate, I think mathematics is important, isn't it? But you can't say we want English and mathematics even where you don't need to calculate. There is this inflexibility sometimes that is introduced. I think universities, polytechnics and colleges are some of the most conservative institutions. Let's be more flexible concerning this. When you see it's needed, yes, it's needed. It cannot be a general entry qualification.”

2.2 Harnessing Disciplinary Tribes

Society harnesses its institutional capabilities to address the needs that occurred during the 18th century, namely the rise of science, commercialism, secularism and individualism in the Western world (McElreavy et al., 2016). During this period, education was called upon to satisfy the needs of seamen, merchants, artisans and frontiersmen (McElreavy et al., 2016), confirming the practical utility of disciplines and conflicts along the continuum.

The belief in the science, technology, engineering and mathematics (STEM) subjects' value and contribution to a well-rounded education has come to the fore in Zimbabwe. This notion has seen the promotion and advocacy for STEM programmes sponsored by the Zimbabwe Manpower Development Fund for STEM students only (Chitate, 2016; Dekeza & Kufakunesu, 2017). This policy can heighten fragmentation and spread antagonism among STEM students and others over subject value and importance. The classification of subjects is achieved through eulogies about STEM aired by the media using phrases such as 'STEMITISATION for addressing social and national economic challenges' and 'IF WE STEMITISE, WE INDUSTRIALISE', testifying to the high value bestowed upon the sciences. The government designed the preferential treatment of STEM subjects to inspire students to develop an appreciation for mathematics and science (Gadzirayi et al., 2016). This biased appreciation of one area may produce unethical scientists posing a danger to society in research, war, and medicine (Thomas, 2013). Indubitably, STEM subjects can be enriched by interdisciplinarity amongst them first and then the arts and commercials.

In Zimbabwe, the value-laden perception of the sciences has led to increased training of secondary school science teachers at Mkoba, Joshua Mqabuko Nkomo and Masvingo teachers' colleges (Ndlovu, 2018), ignoring other subjects, with 42,664 trained teachers (81.18%) out of a total of 47,839 secondary school teachers (Zimbabwe National Statistics Agency, 2021). Moreover, mathematics, science and technical-vocational teachers were incentivised because of STEM subjects'

industrialisation potency. However, the challenge is that approximately 300 teachers leave Zimbabwe each month due to low salaries and poor working conditions compared to other countries in the southern African region (Amnesty International, 2024). Differential treatment based on presumed utility may widen the rift between disciplines and members yet all could be engaged collaboratively. Undoubtedly, STEM education is an integrated, interdisciplinary principle to teaching and learning (Gadzirayi et al., 2016) that can generate innovative ideas for development, as can all *other* subjects in the teacher education curriculum.

2.3 Disciplinary Sections in Zimbabwean Teacher Education

The teacher education curriculum has discrete courses making up professional studies that arose from the apparent otherness created between courses such as Theory of Education Studies (TOE), Subject Studies (Main Study), Professional Studies (Syllabuses A, B, C & D) and School Experiences (teaching practice [TP]) (Mukorera, 1999). This separation has led some lecturers and student-teachers to perceive their course's theory and practice components as unrelated, instigating the compartmentalisation of the teacher education curriculum. The lecturers have often assumed that student-teachers only need a thorough knowledge of the subject to teach well; however, others think a competent teacher needs an understanding of children and appropriate classroom skills (Mukorera, 1999). These perceptions could be the social roots of knowledge fragmentation.

The structural organisation of teacher education curriculum presents the subject clusters as disparate and incompatible. The main teaching subject is viewed as providing personal education and content knowledge of teaching a subject in the classroom. Similarly, TP is taken to test teaching skills, while TOE provides theoretical knowledge. The distinctions have promoted fragmentation that is blamed upon lecturer behaviour and discrete compartmentalisation (Mudavanhu, 2014). The fields may be seen as the separate components of a whole because student-teacher candidates should satisfy examiners in the broad areas (TOE, PS, MS and TP) of teacher education competence.

The organisation of teacher training programmes compartmentalises the components constituting the Zimbabwean teacher training courses (Mukorera, 1999). Such a programme may fail to promote holistic development of student-teachers because the success of education depends on its teachers' competencies in translating theory into practice (Colclough et al., 1990). A compartmentalised curriculum results in lecturers who socialise student-teachers into a fragmented and distorted course programme that informs their practice and perpetually reinforces existing divisions (Ottewill et al., 2005). The Zimbabwean teacher education curriculum covers similar areas across the sector. It includes Professional Studies (PS) (syllabuses A, B, C and D), TOE, Main Studies (MS) and TP, with much duplication (Chivore et al., 2015) that interdisciplinarity can resolve.

2.4 The Value-Laden Nature of Zimbabwe Teacher Education Curriculum

Mukorera (1999) contended that the value-laden nature of the areas lies in their traditional divisions, as described by Chivore et al. (2015). The division values MS more than PS because PS lacks the rigour of theory and the relevance of practice,

despite its mediating role between all other subjects and TP (Mukorera, 1999). Thus, most students perceive their courses' theoretical and practical components as unrelated (Mukorera, 1999).

The subject division has resulted in a lack of deliberate effort to infuse science, technology and society into the teaching methods course for teachers (Kasembe, 2011). Strict disciplinarity divides academic institutions along disciplinary groupings and shapes academic identities and careers (Becher & Trowler, 2001; Ottewill et al., 2005). The segmentation is viewed as responsible for rank-ordering areas that are seen as more powerful than others in institutional politics. Consequently, lecturers under TOE and MS are more recognised than those in other clusters who lack universal currency (Mukorera, 1999). That is why lecturers and students often describe some subjects as the "backbones of the course" that must be passed at all costs (Mavundutse, 2004). To some extent, differentiated instruction fuels compartmentalisation because the traditional categorisation of university organisational and pedagogical structure limits the possibilities, as the discrete, self-sufficient and bound subjects cannot address all social issues (Davies & Devlin, 2007).

2.5 Interdisciplinarity in Zimbabwean Teacher Education

Policy in Zimbabwe seems silent on interdisciplinarity (Dambudzo, 2015) yet the use of ICT, the new curriculum subjects, and cross-cutting issues point towards interdisciplinarity. Although Zimbabwean schools use the same curriculum document, integration is erratic (Dambudzo, 2015), with no deliberate effort to move from knowledge compartmentalisation to interdisciplinarity (Kasembe, 2011). Up to now, no research has addressed this phenomenon and, hence, this study seeks to fill this gap. Implicit interdisciplinarity is noted in the Curriculum Framework for Primary and Secondary Education's (2015-2022) cross-cutting themes (Ministry of Primary and Secondary Education, 2015), showing disciplinary relationships for integration. The advocacy for curriculum integration comes to naught if the same is not practised in teacher education. That could be why some student-teachers on TP merely mention cross-cutting themes in schemes and plans of work but never refer to them in their lessons.

Teacher training is a professional procedure that prepares teachers to serve society in various capacities (Saif & Reba, 2017) and act in loco parentis. This objective is possible because all areas are designed to merge. In this amalgamation, MS supplies personal education and knowledge of the teaching subjects, PS, the knowledge of teaching subjects and related executive skills, TP tests PS, and TOE provides the educational processes (Mukorera, 1999). As such, the disciplinary culture in the Midlands Province TTIs is an inconsistent phenomenon that needs to be studied. The knowledge, skills, and abilities relevant to and crucial for teachers (Saif et al., 2017) are drawn from all the teacher-education subjects. The preparation succeeds if student-teachers in the Midlands Province are released from the ensnaring segmented disciplinary "cage of limitations" (Kizel, 2016) towards the wholeness of interdisciplinarity, for instance, through team teaching or a thematic approach.

The Zimbabwean teacher training programme consists of various subjects that are grouped into clusters and departments based on the kinship of their knowledge, that, interdisciplinarity indication where TOE, PSA and TP knowledge from the Educational Foundations Department join forces to address teacher training. In that way, student-teachers are socialised to reason across, beyond, and through academic disciplines involving all types of knowledge. The convergence offers richer learning possibilities, spanning the length and breadth of theoretical knowledge to practice, and vice-versa (Ertas et al., 2003). Unless hegemonic forces bar them, some groundwork for interdisciplinarity has been done and awaits action by lecturers and student-teachers.

2.6 The Hegemonic Nature of Compartmentalisation Globally

Billingsley and Ramos Arias (2017) defined compartmentalisation as “the creation of rigid boundaries between subject disciplines that make it difficult, if not impossible, for students to bridge those disciplines” (p. 44). It refers to the fragmentation of knowledge into subjects that emerged in the Western academy and is accepted by society as acceptable (van Merriënboer & Kirschner, 2017). It is reminiscent of Gramsci’s cultural hegemony through education, media and religion, which shape beliefs and values to maintain the power structure, even without overt force.

Compartmentalisation has led to specialised, narrow partitioning of knowledge that blocks the production of meaningful and valuable knowledge (Hellman, 2015). The practice stifles student curiosity and inquisitiveness, leaving students with knowledge gaps, confusion, misconceptions about scholarship, and a lack of epistemic insight (Billingsley et al., 2017). This approach is supported by subject-specific curriculum documents, examinations, teacher education, specialist teachers, and venue allocation to specific subjects. It is worrying that little attention focuses on institutional processes of interdisciplinary education (Hannon et al., 2018), possibly influenced by Gramsci’s cultural hegemony that has naturalised the arrangement. In themselves, the institutional processes are ideological because social institutions transmit ruling-class ideas that are consented to by the subalterns (Herrmann, 2017).

2.7 The Influence of Classification of Knowledge into Disciplines

The modern disciplinary system developed around the 1800s (Geuss, 2009; McElreavy et al., 2016). Scholars specialised in the fields of interest and defined their fields of study leading to knowledge, communities, and the growth of professions that carved out the academic discipline landscape (Geuss, 2009; McElreavy et al., 2016). The classification of knowledge is based on power dynamics and culminates in the fragmentation of theoretical knowledge and practice. The argument is that reduction makes recipients fail to see the value of integration and theory-practice interdependence (Maton, 2014). In this regard, Bernstein (2003) contended that there is a new concept of knowledge and its relation to knowledge creators and users should flow like money to wherever it can create advantage and profit.

2.8 Assumptions from the Hegemonic Nature of Compartmentalisation

Since the intelligent brain can handle a dense body of knowledge, cultural hegemony persuades lecturers and preservice teachers into strict disciplinarity. Compartmentalisation could be the reason why education is blamed for the experts' failure to collaborate (McElreavy et al., 2016), because knowledge is divided into academic tribes (Becher, 1989) that condition and govern the academics' behaviour and values, leading to binary categories of hard/soft, pure/applied, convergent/divergent and urban/rural (Trowler, 2014). Regardless of this nature, interdisciplinarity can reverse this conditioning and ensure collaboration.

3. Research Methodology

The critical theory paradigm was chosen to anchor this study as it focuses on power, inequality, and social change. It helps us understand existing social injustices and their implications and gives us ways to challenge the status quo and foster social change (Paynton & Hahn, 2021). Critical theory does not simply aim to describe social reality but to clarify the forces of domination in society and inform practical action and social change (Celikates & Flynn, 2023). It embraces praxis because it combines theory and practice, which the theorist can use to forge unity with the oppressed with an emancipatory interest in abolishing social injustice and creating decent conditions of life (Celikates & Flynn, 2023). Critical theory does not simply attempt to understand power structures but also seeks to change them constructively (Celikates & Flynn, 2023).

Concerning this study, critical theory can empower lecturers and student-teachers to challenge and transform the existing curriculum fragmentation based on the ranking of subjects and perceived scientific value. Consistent with the critical theory paradigm, a qualitative research methodology was chosen in this study since it is a naturalistic process of inquiry that seeks to gain an understanding of a phenomenon in its natural setting (Aspers & Corte, 2019; Hennink et al., 2020). It is a multimethod, interpretative, and naturalistic approach in which qualitative researchers attempt to study things in their natural settings and interpret phenomena according to the meanings that people bring to them (Aspers & Corte, 2019; Denzin & Lincoln, 2005). Qualitative research methodology relies on people's experiences as agents of meaning-making in their daily lives.

The problem and research questions steered the researchers towards qualitative research to explore the social reasons behind knowledge fragmentation according to lecturers and student-teachers in Zimbabwe's Midlands Province. The qualitative inquiry facilitated the generation of words as data for interpretive analysis (Busetto et al., 2020) from natural settings (TTIs) by looking closely at the participants' (lecturers and trainee teachers) words, actions and records (assignments, timetables, examination scripts, syllabi). The qualitative inquiry is a repetitive process in which researchers gain greater understanding by getting closer to the phenomenon to understand it from participants' standpoint (Aspers & Corte, 2019).

A case study design was chosen for this research to generate an in-depth understanding within a defined boundary of space and time concerning the phenomena of interest (Brundrett & Rhodes, 2014). It suited the current sociological exploration of social factors regarding the disciplinarity-interdisciplinarity dichotomy. The design fit this educational inquiry as a field of knowledge that employs case studies (Montes-Rodríguez et al., 2019). The case was one province in Zimbabwe, with selected participants from three sites representing the whole case. The case provided a unique instance of real people (lecturers and student-teachers) in naturalistic contexts (TTIs). The design allowed for in-depth, multi-faceted exploration of complex issues in a real-life environment (Crowel et al., 2011). It is helpful to obtain an appreciation of the use of course knowledge in fragments in TTIs. It was deemed suitable as it focused on purposively sampled TTIs in the province for in-depth study.

3.1 Research Population

This study's target population comprised 800 student-teachers in their final year and 100 lecturers from three TTIs in Midlands Province. A population is a group of people who are the focus of the study that the researcher wants to study and serves as the basis to determine sampling size and techniques (Althubaiti, 2023; Giddens, 2009). The Midlands Province was chosen as a particular case because of the prevalence of knowledge compartmentalisation noted at one of its TTIs. A case represents a population of cases that is bigger than the case itself to elucidate the features of a larger population (Seawright & Gerring, 2008).

3.1.1 Sampling Procedure and Sample Size

Purposive sampling was used to choose TTIs based on the researchers' judgement that they were information-rich (Campbell et al., 2020; Sharma, 2017). Purposive sampling helps researchers decide what needs to be known and to look for willing, knowledgeable, and experienced participants (Etikan et al., 2016). Typical case sampling was used to choose the province and three TTIs. Typical case sampling helps to determine the 'typical' cases by choosing participants based on their likelihood of behaving like the rest (Benoot et al., 2016). Due to time constraints, critical case sampling was used to select one of the three research sites for document analysis and observation, where 16 student-teachers and 10 lecturers were purposively selected as the critical cases. Students whose coursework and examinations were in the very good range (70-79%) and distinction range (80% and above) were purposively sampled as interviewees.

3.1.2 Data Generation Methods and Instruments

Various research methods, notably interviews, focus group discussions and observations, were used to generate data from various research participant groups to address the problem (Berryman, 2019). These methods are useful in exploring how individuals see, think, experience and interpret phenomena to answer 'why' questions through rich and thickly-detailed data (MacDonald & Headlam, 2011; Walliman, 2021). They help reveal people's judgements, emotions, ideas, and beliefs in words to produce qualitative data because words cannot be manipulated mathematically (Walliman, 2021). These research methods were appropriate for the current study, which explored the causes of knowledge

fragmentation by student-teachers using interview schedules, documentary analysis, and observation guides as data collection instruments. The triangulation of these instruments ensured credibility, dependability, and the confirmability of research findings generated from multiple sources using different procedures.

3.1.3 Data Collection Procedure

As Creswell (2012) suggested, the researchers sought and obtained permission to access research sites and participants from different gatekeepers at various levels. In this regard, the ethical clearance was obtained from the UNISA College of Education Ethics Review Committee (Certificate Number: Ref: 2020/09/09/61514004/18/AM) after it ensured that the rights of participants would be protected, including the right to withdraw from the study at any time without suffering any retribution. Afterwards, the MHTEISTD in Zimbabwe granted permission to conduct the study. Subsequently, the primary researcher conducted initial familiarisation and preliminary meetings with the local gatekeepers and participants. The data sources in this case were preservice teachers and lecturers from three sites, including one purposively chosen research site for document analysis in Zimbabwe's Midlands Province.

4. Data Analysis

Data analysis is organised according to different participant groups and the themes that emerged within each group: student-teachers' interviews and the lecturers' interviews.

4.1 Data from Student-Teacher Interviews on Origin of Knowledge Fragmentation

4.1.1. Students' Disciplinary Eulogies

During the interviews with the student-teachers, all the participants mentioned some subjects predominantly or first, while others were forgotten, ignored or mentioned as afterthoughts. Participants SA, SB, SD, SE and SG mentioned their MS areas first, then mentioned other subjects afterwards. Only SC and SF named other disciplines first. The infrequently mentioned subjects were Research Methods, TP, Communication Skills, Curriculum Depth Study, National Strategic Studies and Health and Life Skills Education. This behaviour confirmed the subject value continuum as a source of fragmented use of course content. The students' perceptions of their MS may influence either fragmentation or interdisciplinarity. Such perceptions may become taken for granted and consented to by all. As students named their MS, they tended to praise these subjects, as portrayed in Table 1.

Table 1: Disciplinary rankings

Participant	The best	Compared to others	Important	Practical skills	Good	Neutral
SA	✓	✓	✓			
SB	✓	✓	✓			
SC	✓	✓	✓	✓		
SD	✓	✓	✓	✓		
SE	✓	✓		✓		

SF	✓	✓	✓	✓		
SG	✓	✓				
SH	✓		✓			
SI						✓
SJ	✓	✓				
SK			✓			
SL						✓
SM						✓
SN						✓
SO						✓
SP		✓			✓	

All the participants used some descriptors to emphasise their MSs. Only SI, SL, SM, SN, and SO presented relatively neutral descriptions. The characterisation included superlative descriptions, drawing comparisons, importance and skilling contribution. Most interviewees (SA, SB, SC, SD, SE, SF, SG, SH, S1 and SJ) used superlative descriptors for their MS. For instance, SC described Computer Science as “*the best subject that provides many benefits, teaches a lot and conquers the world and all subjects*”. Some always highlighted the superiority of their specialisation subjects but belittled ‘others’, for example, SA said Social Studies (SS) was “*unlike other subjects that are not applicable in life and community*”. By stressing the value of their disciplines, the participants showed their disciplines’ hegemonic social statuses, whether ascribed or achieved, with the power to influence fragmented use.

4.1.2. Causes of Course Knowledge Fragmentation

The data on approaches employed at the three sites revealed an integration-uncertain divide, as represented in Table 2.

Table 2: Approaches practised

Interdisciplinarity Approach	Fragmented Approach	Uncertain
SB, SG, SH, SJ, SL, SM, SO	SA, SC, SD, SI	SA, SE, SF, SK, SN

Data showed that SB, SG, SH, SJ, SL, SM and SO said interdisciplinarity was practised, while SA, SC, SD and SI said fragmentation was used, and SA, SE, SF, SK and SN were unsure. The approach-discord points to the roots of the fragmented use of subjects. The causes of strict disciplinarity raised are summarised in Table 3.

Table 3: Social causes of disciplinary knowledge fragmentation

	Sub-themes	Proponents	Frequencies
1	Looking down upon some disciplines	SA, SF, SG, SN	4
2	Valuing some disciplines	SB, SG, SH, SE	4
3	Negativity	SA, SD, SE, SF, SG, SI,	9
4	Specialisation	SD, SE, SH, SI, SL,	7
5	Orientation campaigns	SD, SN	2

6	Fear to across the disciplinary borders	SH	1
7	Favourite disciplines	SN	1

The data showed condescending attitudes towards some disciplines, specialisation, individual orientations, fear of working across disciplinary boundaries, and favouritism as driving the fragmented use of subjects. These factors generated conflict due to the biased and scornful perceptions of stakeholders. It also emerged that ignorance of the interdisciplinarity approach, the complex nature of interdisciplinarity, a lack of models, socialisation into disciplinarity, personal attributes, uniqueness of subjects, and plenitude amid paucities influenced fragmented use of course content.

4.2. Data from the Lecturers' Interviews

4.2.1. Causes of Course Knowledge Fragmentation

The theme from the lecturers' interview data centred on the causes of the lecturers' and student-teachers' tendency to use knowledge in isolation.

The data revealed the dominance of the traditional disciplinary approach, as summarised in Table 4.

Table 4: Disciplinarity as the norm

Interviewee	Site	Approach to use of disciplinary knowledge
L1	C	Disciplinary
L2	A	Disciplinary
L4	A	Disciplinary
L5	A	Disciplinary
L6	A	Disciplinary
L8	A	Disciplinary

The data showed the dominance of a disciplinary approach for various reasons. For instance, L1 blamed disintegrated, mystified, compartmentalised and demarcated presentation, and use of disciplines. L6 explained this thus:

"From my experience, there is no deliberate will to coordinate the integration of areas dealing with theoretical and practical issues. So, those taking the theoretical component are just covering their part without recognising what the other part is doing, or they take it as obvious. The furthest I go, the more I can draw implications."

From the interviews with lecturers and this excerpt, it emerged that lecturers socialised student-teachers into disciplinarity. Despite pervasive disciplinarity, other data suggested some semblance of interdisciplinarity.

4.3. Embracing interdisciplinarity: Towards theory-praxis nexus

The primary focus of the study was to establish the social roots of the use of subject knowledge in silos by lecturers and student-teachers to encourage interdisciplinarity that interconnects theoretical knowledge to practical action. It also probed the implications of knowledge fragmentation on the amount and quality of content knowledge that lecturers and student-teachers can acquire and

deliver. This was followed by exploring strategies that can promote interdisciplinarity. Having noted the dominance of disciplinarity in the three institutions, possible ways to embrace interdisciplinarity in TTIs produced data are presented in Table 5.

Table 5: Proposed ways of embracing interdisciplinarity

Interviewee	Ways towards embracing interdisciplinarity
L1	<ul style="list-style-type: none"> • Shun isolation of knowledge. • Encourage knowledge overlap. • Use of ICT tools. • Use of novels for teaching history. • Lecturers to operate beyond boundaries by reading other
L2	<ul style="list-style-type: none"> • Sharing topics depending on one's flair. • Team-teaching.
L3	<ul style="list-style-type: none"> • Buttressing disciplinary knowledge with topics from other
L4	<ul style="list-style-type: none"> • Deconstructing in order to reconstruct new things involving.
L5	<ul style="list-style-type: none"> • Workshopping lecturers to encourage them to avoid strictly focusing on their specialisation but look at how our area links with other areas (advocacy). • Capacity building of lecturers. • Relate every topic to others. • Team teaching where members come from different subjects.
L6	<ul style="list-style-type: none"> • Put in place collaborative processes in planning and creating.
L7	<ul style="list-style-type: none"> • Use syllabuses or sources of information of other disciplines to complement the ones we have. • Invite resource persons.
L8	<ul style="list-style-type: none"> • Create an open system for teamwork e.g., designing syllabuses. • Disciplines co-opting members from other areas in meetings and workshops. • Open an innovation approach to teaching-learning. • Do away with the big brother mentality held by some areas and their members.
L9	<ul style="list-style-type: none"> • Consultation and interaction with members from other disciplines. • Resource persons.
L10	<ul style="list-style-type: none"> • Team teaching, thematic approach.

The strategies proposed to promote interdisciplinarity included collaboration, cultivation of interdisciplinarity and specialisation. In the form of team teaching and resource persons, collaboration was subscribed to by L2, L5, L6, L7, L9 and L10. For instance, L6 suggested:

"I would put collaborative processes first. Collaboration involves the engagement of various subject specialists planning collaboratively rather than separately, whereby disciplines create their work and syllabi separately. Everybody should be involved through teamwork, from planning to delivery."

The participants emphasised the importance of team teaching or team lecturing, in which teachers and lecturers plan, teach, and evaluate learning activities, lesson

scope, instructional materials and teaching strategies together in supportive ways that leverage their strengths and overcome their weaknesses. Additionally, resource persons who are disciplinary experts can be invited to class to provide knowledge, information, or opinions more extensively than can be covered in a typical lesson or lecture.

Other ways included advocacy for boundary-breaking through workshops (L4), relating every topic to others for continuity (L5), creating an open system during syllabus design, subject workshops or meetings and embracing an open approach to teaching-learning that encouraged innovation, creativity and vibrancy. Additionally, L2 suggested employing the thematic approach in lecturing:

“Teachers should borrow and marry knowledge across subjects to enrich learning and interdisciplinarity. They should do away with the rigid compartmentalisation of subjects and demystify this by decompartmentalising knowledge, for example, by sharing topics depending on one’s flair, not subjects.”

5. Findings

The study sought to establish social factors causing lecturers and student-teachers in Zimbabwe’s Midlands Province to use course knowledge in a fragmented manner. To this end, interviews, document analysis and observation were conducted.

Based on the research questions, the findings emanating from this study are that lecturers and student-teachers treated course subject knowledge separately because of a disciplinary culture, manifesting via various social forces. The student interviews revealed apparent knowledge fragmentation in Zimbabwean TTIs, as seen by ranking subjects according to importance. In this regard, all the student-teacher participants mentioned some subjects predominantly but ignored others. This bias could be linked to the fact that some quarters of the academic community try to dominate or lead others by presenting the disciplinary arrangement as a certainty. Haque et al. (2020) contended that this arrangement garners spontaneous consent by spreading ideologies of the powerful, which are beliefs, assumptions and values transmitted through social institutions like that of education. This was revealed by how the student-teachers named and described some subjects but forgot, ignored, or denigrated others.

Data regarding the social origins of the use of knowledge in a fragmented form located it in the organisation of all knowledge into disciplines defined by participants as ‘divisions’, ‘branches of knowledge’, ‘areas of specialisation’ or ‘departments’. Other social causes of knowledge fragmentation included ranking/rating the subjects based on common-sense views and comparing the subjects and conflict among disciplines and members in an attempt to dominate others or maintain the status quo.

This research sought to establish how the interdisciplinary approach could be promoted by encouraging student-teachers to link theory to practice. The findings identified collaboration as a significant way of promoting IKI, for example, through team teaching and cultivating an interdisciplinary culture. Nurturing the acceptance of and a positive attitude towards all disciplines was also proposed to

remove the toxic perceptions of disciplines. Other ways that emerged included modelling by lecturers and interdisciplinarity advocacy. Using the thematic approach and sharing lecturing topics based on individual abilities were projected as some strategies for promoting interdisciplinarity. The findings also suggested assigning student-teachers to serve as mini-lecturers by presenting on some topics.

6. Discussion

Zimbabwe's teacher education courses are arranged into sections, clusters and departments designed to converge and mould competent teachers. This arrangement is blamed for the compartmentalised use of the course components (Mukorera, 1999), as revealed in the students' MSs value-laden descriptors. This confirms that MS is highly valued but PS does not have the rigour of theory or the relevance of practice (Mukorera, 1999). The definitions of academic disciplines as areas of specialisation, fields of study, curriculum components, learning areas, modules, or departments seemed to indicate subject separation. The definitions stressed the division of knowledge or intentional narrowing and grouping of knowledge into subjects (Ndhlovu et al., 2021), possibly misinterpreted by lecturers and students-teachers as divorced from each other and nurturing condescendence and cultural hegemony (Davies & Devlin, 2007). Hwang and Kisida (2021) blamed specialisation for weakening student-teacher (and even teacher-teacher) relationships.

The findings highlighted inconsistencies in teaching-learning approaches in TTIs. A disciplinary culture seemed dominant in all the institutions and may account for the failure to discern the link between theory and practice due to traditional practices in teacher education (Korthagen et al., 2006; Mhlolo, 2014). The silo approach nurtures the perception that some subjects are more important than others (Mudavanhu, 2014), leading to compartmentalisation and differential valuation of subjects. In a review of teaching and learning strategies used in the UK higher education sector, Ottewill et al. (2003) observed that a compartmentalised curriculum causes students to acquire a fragmented and distorted view of knowledge, which unavoidably informs their practice and reinforces existing divisions. In this regard, Becher (1994) noted that compartmentalisation is behind the academic institutions' fragmented organisational arrangements because the subject approach shapes academic identities and careers such as "academic tribes and territories". Lecturers indicated specialisation, ignorance, negative attitudes, time constraints and staff conflict as influencing fragmented use of course subjects, confirming the subjects' behaviour as academic tribes and territories, charging to establish cultural domination or leadership. This behaviour can be resolved by interdisciplinarity, which challenges disciplinary hegemony in education (Henry, 2005) because knowledge production is influenced by power relations rooted in cultural hegemony.

In a study of the importance of interdisciplinarity in the teaching-learning process in postgraduate teacher education in Brazil, Santos et al. (2017) noted that teacher training courses and school subjects were compartmentalised. To overcome

fragmented teaching, they argued against a linear hierarchical model and advocated greater interdisciplinarity in daily teaching practices to enable students to gain a global view of the world. Document analysis revealed the causes of knowledge fragmentation by student-teachers, including specifying compulsory subjects as conditions for qualifying, differential placement and time allocation, and strict specialisation in lecturing, among others. At some point, the Zimbabwean teachers' colleges were required to teach mathematics to those students who had been enrolled without prior knowledge of that high-status subject (Mswazie & Gamira, 2011), which affirms the hegemonic status of the subject. Similarly, Santos et al. (2017) noted that Brazil's current school curriculum design promotes the delivery of fragmented contents of different areas of knowledge because of overspecialisation. They contended that knowledge has been organised into different disciplines to enhance expertise. However, this has culminated in a fragmented teaching-learning process that undermines critical thinking and intellectual curiosity.

Observation data showed a bragging culture, solo lecturing, power dynamics, conflict over lecture slots on the timetable and disciplinary value judgements as social causes of knowledge fragmentation by student-teachers. These findings reflect that differentiated faculties exist in competitive separatism, with few or no bonds between specialisms or opportunities to explore common aims and values that have shaped the divisive nature of academic fragmentation (Hanke et al., 2021; Reeves, 1988). The result is antagonism, emasculation, and naturalisation of the dominance of some subjects.

In a review of curriculum integration in Kenya, Magoma (2016) argued that the traditional school with subject barriers characterised by compartmentalisation or pigeonholing of knowledge does not add much value to life. A supportive interdisciplinarity culture (Hibbert et al., 2014) can help overcome fragmented use of course content. Team teaching was found to help multiple disciplines collaboratively design a curriculum and facilitate learning (Collins, 2017; Petri, 2010). The method helps students develop tolerance to multiplicity and realise the relativism, contingent and contextual nature of beliefs, theories and values (Herrón, 2010; Perry, 1999), which gears them to embrace IKI. Anderson and Speck (1998) agreed that team teaching encourages multiple perspectives, dialogue and engagement, which enrich teaching and learning. In higher education, Liebel et al. (2017) argued that team teaching enriches learning, gives students multiple explanations of complex concepts and bolsters teacher development. In a study conducted in Flanders, Belgium, Mariën et al. (2023) explained team teaching as a collaborative form in which two or more teachers collaborate to plan, teach, and evaluate the course or lesson together.

Introducing specific learning goals may also guide lecturers and students through interdisciplinary information integration (Carmichael & LaPierre, 2014). It removes segregation tendencies, negative attitudes, patronising and prejudices towards certain subjects as lecturers cooperate in guiding students towards knowledge integration (Hoadley et al., 2012). Similarly, integrating perspectives using cross-cutting themes (Golding, 2009; Kidron & Kali, 2015) to fuse

knowledge from different disciplines can be achieved through various activities around a selected theme.

Inviting resource persons and creating an open system for teamwork were also proposed as possible strategies. Resource persons or guest lecturers can be drawn from the same institution, other institutions, or industry and are people with expertise who can bring new information and perspectives that are not covered in regular classes. They add credibility to the content, cultivate critical thinking and problem solving, and create shared value with students and staff (Jablon-Roberts & McCracken, 2022).

The participants emphasised the need for some subjects and members to remove a 'big brother' mentality. Hence, it is essential to empower student-teachers by asking them to be mini-lecturers because the best way to learn something is to teach it (Davies & Fung, 2018), as this promotes independence, confidence and the ability to learn how to learn, and develops lifelong skills (Duerr, 2008). By adopting these suggested methods, TTIs in Zimbabwe can assist student-teachers to embrace interdisciplinarity in generating functional knowledge that combines theory to practice and solves professional and social problems.

7. Conclusions

The study's main conclusion is that social factors, such as disparaging some disciplines, valuing other disciplines, negativity and the fear of crossing the disciplinary boundaries, are behind the lecturers and student-teachers' fragmented use of knowledge. The findings indicate that traditional subjects are considered more valuable and prestigious in Zimbabwe than technical and vocational subjects. In their study in Ghana, Fusheini and Abudi (2022) observed that students who had obtained poor results in primary school leaving examinations were enrolled in visual arts and technical classes in senior high schools because principals deemed them unfit to handle complex subjects, such as mathematics and science, as the good students. They further noted that teachers generally discouraged intelligent students from choosing the visual arts programme because they believed science courses were academically superior and economically better (Fusheini & Abudi, 2022).

The data from the interviews, documentary analysis, and observation showed that these social issues influence the isolated deployment of course knowledge. The fragmented use of knowledge was located in a disciplinary competition aimed at cultural hegemony for pole position and specialisation. It is indisputable that environmental factors, together with cultural diversity in Zimbabwe, significantly influence the treatment of knowledge in silos. In Saudi Arabia, Aldossari (2020) noted that TVET is generally stigmatised in favour of traditional academic education, which lead to 'white-collar' jobs (professional, executive or managerial roles). However, by limiting the role of TVET, the Saudi education system fails to prepare students for the global economy (Aldossari, 2020). Due to the stigmatisation of technical and vocational careers by Saudi society, the private sector mainly employs non-locals in the face of rising unemployment.

Evidence generated from this study indicates that the unbeneficial disciplinarity could be supplemented successfully with interdisciplinarity by adopting methods such as team teaching, peer teaching, modelling, and interdisciplinarity advocacy. The lecturers and student-teachers can benefit from practising these ways towards interdisciplinarity, mainly when supported by stakeholders in teacher education. The study's primary limitation was that it was conducted during the COVID-19 lockdown measures and face-to-face interviews were replaced by telephonic ones, which removed the opportunity to observe participants' physical expressions.

8. Recommendations

The recommendations are divided into practical and research components. Concerning the policy or practical aspects, the study recommends that the MHTEISTD implement mechanisms, policies, and programmes that mandate an interdisciplinary approach to teacher education. This approach can be best addressed through the heritage-based doctrine (Doctrine Education 5.0) and the Ministry of Primary and Secondary Education in Zimbabwe's heritage-based curriculum for Zimbabwe's modernisation and industrialisation since teachers are change agents. In Zimbabwe, and other countries, interdisciplinarity can be achieved through greater curriculum integration and team teaching, in which lecturers and teachers teaching the same courses or related disciplines can plan, teach, and evaluate the lessons together to promote teaching and education quality.

Since IKI is beneficial in teacher education, the Centre for Teacher Education and Materials Development, responsible for quality assurance in teacher education institutions in Zimbabwe and independent universities, should collaboratively work towards attaining Sustainable Development Goal 4 (SDG4) - quality education for all. In addition, TTIs should respond to the MHTEISTD's call to transform teacher education using interdisciplinarity to deal with the duplication of topics and concepts across subjects. It is further recommended that TTIs move away from exclusive disciplinarity as it fails to address academic and social issues holistically, as envisaged by SDG4. Interdisciplinarity or boundary crossing marked by interlinking subjects can help TTIs respond more meaningfully to the challenges posed by knowledge compartmentalisation and enhance the prospects of attaining quality education for all in Zimbabwe and other countries, as espoused by SDG4.

Lecturers are encouraged to avoid fuelling disciplinary conflicts by over-emphasising the importance of their areas of specialisation, while belittling others that have a place in the course programme. Instead, they should model interdisciplinarity. Finally, it is recommended that student-teachers incrementally integrate the vocabularies, terms, theories, views and concepts from different subjects in various ways across subjects to explain, clarify, support, defend, argue, reflect, compare or exemplify issues. Regarding research, it is recommended that interdisciplinarity, its feasibility and educational benefits be researched more since there is little information on this area. Such research could tackle the challenges of knowledge compartmentalisation, overspecialisation, subject rivalries, and unemployment in Zimbabwe and other countries.

9. References

- Aldossari, A. S. (2020). Vision 2030 and reducing the stigma of vocational and technical training among Saudi Arabian students. *Empirical Research in Vocational Education and Training*, 12, 3. <https://doi.org/10.1186/s40461-020-00089-6>
- Althubaiti, A. (2023). Sample size determination: A practical guide for health researchers. *Journal of General and Family Medicine*, 24(2), 72–78. <https://doi.org/10.1002/jgf2.600>
- Amnesty International. (2024). *Zimbabwe's education crisis: A tale of debt, deficits, and departing teachers*. <https://www.amnesty.org/en/latest/education/2024/05/zimbabwes-education-crisis-a-tale-of-debt-deficits-and-departing-teachers/>
- Anderson, R. S., & Speck, B. W. (1998). "Oh what a difference a team makes": Why team teaching makes a difference. *Teaching and Teacher Education*, 14(7), 671–686. <https://psycnet.apa.org/record/1998-12638-001>
- Aspers, P., & Corte, U. (2019). What is qualitative in qualitative research. *Qualitative Sociology*, 42, 139–160. <https://doi.org/10.1007/s11133-019-9413-7>
- Becher, T., & Trowler, P. (2001). *Academic tribes and territories: Intellectual enquiry and the cultures of disciplines* (2nd ed.). Open University Press. <https://www.researchgate.net/file.PostFileLoader.html?id=559d66595e9d9750378b45e4&assetKey=AS%3A273809418981386%401442292660592>
- Becher, T. (1989). *Academic tribes and territories: Intellectual enquiry and the cultures of disciplines*. Open University Press.
- Becher, T. (1994). The significance of disciplinary differences. *Studies in Higher education*, 19(2), 151–161. <https://www.tandfonline.com/doi/abs/10.1080/03075079412331382007>
- Benoot, C., Hannes, K., & Bilsen, J. (2016). The use of purposeful sampling in a qualitative evidence synthesis: A worked example on sexual adjustment to a cancer trajectory. *BMC Medical Research Methodology*, 16, 1–12. <https://doi.org/10.1186/s12874-016-0114-6>
- Bernstein, B. (2003). *Class, codes and control: Towards a theory of educational transmission* (Vol. 3). Routledge.
- Berryman, D. R. (2019). Ontology, epistemology, methodology, and methods: Information for librarian researchers. *Medical Reference Services Quarterly*, 38(3), 271–279. <https://doi.org/10.1080/02763869.2019.1623614>
- Billingsley, B., & Ramos Arias, A. (2017). Epistemic insight and classrooms with permeable walls. *School Science Review*, 99(367), 44–53. <https://www.epistemicinsight.com/wp-content/uploads/2020/04/ssr-permeable-walls-studentcopy.pdf>
- Billingsley, B., Nassaji, M., & Abedin, M. (2017). Entrenched compartmentalisation and students' abilities and levels of interest in science. *School Science Review*, 99(367), 26–31. <https://www.epistemicinsight.com/wp-content/uploads/2020/09/SSR-sep2020-theme-on-EI-and-global-concerns-1.pdf>
- Brundrett, M., & Rhodes, C. (2014). *Research in educational leadership and management*. Los SAGE.
- Busetto, L., Wick, W., & Gumbinger, C. (2020). How to use and assess qualitative research methods. *Neurological Research and Practice*, 2(14), 2–10. <https://doi.org/10.1186/s42466-020-00059-z>
- Campbell, S., Greenwood, M., Prior, S., Shearer, T., Walkem, K., Young, S., Bywaters, D., & Walker, K. (2020). Purposive sampling: Complex or simple? Research case examples. *Journal of Research in Nursing*, 25(8), 652–661. <https://doi.org/10.1177/1744987120927206>
- Carmichael, T., & LaPierre, Y. (2014). Interdisciplinary learning works: The results of a comprehensive assessment of students and student learning outcomes in an

- integrative learning community. *Issues in Interdisciplinary Studies*, 32, 53–78. <https://files.eric.ed.gov/fulltext/EJ1117882.pdf>
- Celikates, R., & Flynn, J. (2023). *Critical theory (Frankfurt School)*. <https://plato.stanford.edu/entries/critical-theory/>
- Chingarande, J. K. (2022). Dynamics of online instruction and implications to learners: Focus on lecturers at two universities in Bindura, Zimbabwe. *Journal of African Interdisciplinary Studies*, 6(10), 86–101. <https://kenyasocialscienceforum.wordpress.com/wp-content/uploads/2022/10/pdf-chingarande-dynamics-of-online-instruction-and-implications-to-learners.pdf>
- Chitate, H. (2016). Science, technology, engineering and mathematics (STEM): A case study of Zimbabwe's educational approach to industrialisation. *World Journal of Education*, 6(5), 27–35. <https://doi.org/10.5430/wje.v6n5p27>
- Chivore, B. R. S., Mavundutse, O., Kuyayama-Tumbare, A., Gwaunza, L., & Kangai, P. (2015). *Handbook for quality assurance in associate teachers' colleges*. Harare: Department of Information, Protocol and Public Relations, University of Zimbabwe.
- Chiweshe, M., Edziwa, X., Jumo, C., & Chakamba, J. (2013). The gloomy outlook of practical subjects in Zimbabwe: A case of history perpetuated? *International Journal of Asian Social Science*, 3(4), 890–898. <https://archive.aessweb.com/index.php/5007/article/download/2462/3758>
- Colclough, C., Lofstedt, J. I., Manduvi Moyo, J., Maravanyika, O. E., & Ngwata, W. S. (1990). Education in Zimbabwe: Issues of quantity and quality. *Bulletin: Education Division Documents Swedish International Development Authority 1990*, (50):178–188. <https://cdn.sida.se/publications/files/-education-in-zimbabwe---issues-of-quantity-and-quality.pdf>
- Collins, S. M. (2017). *Examining interdisciplinary education and collaboration in higher education* [Doctoral thesis, St Catherine University Repository]. https://ir.stthomas.edu/cgi/viewcontent.cgi?article=1004&context=ssw_docdis
- Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Pearson.
- Crowel, S., Creswell, K., Robertson, A., Huby, G., Avery, A., & Sheikh, A. (2011). The case study approach. *BMC Medical Research Methodology*, 11(1), 1–9. <https://bmcmmedresmethodol.biomedcentral.com/articles/10.1186/1471-2288-11-100>
- Dambudzo, I. I. (2015). Curriculum issues: Teaching and learning for sustainable development in developing countries – Zimbabwe case study. *Journal of Education and Learning*, 4(1), 11–24. <https://doi.org/10.5539/jel.v4n1p11>
- Davies, J. P., & Fung, D. (2018). The context of the connected curriculum. In: J. P. Davies, & N. Pachler (Eds.), *Teaching and learning in higher education perspectives from UCL* (pp. 3–20). UCL IoE Press. https://www.researchgate.net/publication/336922413_Teaching_and_learning_in_higher_education_perspectives_from_UCL
- Davies, M., & Devlin, M. T. (2007). *Interdisciplinary higher education: Implications for teaching and learning*. Centre for the Study of Higher Education. https://www.researchgate.net/publication/255650663_Interdisciplinary_higher_education_Implications_for_teaching_and_learning
- Dekeza, C., & Kufakunesu, M. (2017). Implementation of STEM curriculum in rural secondary schools in Zimbabwe: Limits and possibilities. *Journal of Emerging Trends in Educational Research and Policy Studies*, 8(1), 11–15. <https://journals.co.za/doi/abs/10.10520/EJC-73a352217>

- Denzin, N. K., & Lincoln, Y. S. (2005). Introduction. The discipline and practice of qualitative research. In N. K. Denzin and Y. S. Lincoln, (Eds.), *The Sage handbook of qualitative research* (pp. 1-32). SAGE.
- Dirzauskaite, G., & Ilinca, N. C. (2017). Understanding "hegemony" in international relations theories. *Development and International Relations Aalborg University*, 18, 33. https://projekter.aau.dk/projekter/files/260247380/Understanding__Hegemony_in_International_Relations_Theories.pdf
- Drake, S. M., & Reid, J. L. (2020). 21st century competencies in light of the history of integrated curriculum. *Frontiers in Education*, 5, 1-10. <https://doi.org/10.3389/feduc.2020.00122>
- Duerr, L. L. (2008). Interdisciplinary instruction. *Educational Horizons*, 86(3), 173-180.
- Ertas, A., Maxwell, T., Rainey, V. P., & Tanik, M. M. (2003). Transformation of higher education: The transdisciplinary approach in engineering. *IEEE Transactions on Education*, 46(2), 289-295. <https://doi.org/10.1109/TE.2002.808232>
- Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American journal of theoretical and applied statistics*, 5(1), 1-4. <https://doi.org/10.11648/j.ajtas.20160501.11>
- Fusheini, M. Z., & Abudi, A. (2022). Students' misconceptions about visual arts and technical in the study of SSTVET in Bagabaga College of Education, Tamale. *Social Education Research*, 1-13. <https://doi.org/10.37256/ser.3420221713>
- Gadzirayi, C. T., Bongo, P. P., Ruyimbe, B., Bhukuvhani, C., & Mucheri, T. (2016). *Diagnostic study on status of STEM in Zimbabwe*. Bindura University of Science Education and Higher Life Foundation. https://www.researchgate.net/publication/303051903_Diagnostic_Study_on_Status_of_STEM_in_Zimbabwe
- Geuss, R. (2009). Goals, origins, disciplines. *Arion: A Journal of Humanities and the Classics*, 17(2), 1-24. <http://www.jstor.org/stable/40646040>
- Giddens, A. (2009). *Sociology* (6th ed.). Polity Press.
- Golding, C. (2009). *Integrating the disciplines: Successful interdisciplinary subjects*. Centre for the Study of Higher Education, the University of Melbourne. https://gened.psu.edu/sites/default/files/docs/LOA%20-%20InterdisciplinaryCourse_HowTo_Guide-Gooding.pdf
- Gundogan, E. (2010). Postmodern politics and Marxism. *CEU Political Science Journal*, 5(1), 54-81. http://epa.niif.hu/02300/02341/00018/pdf/EPA02341_ceu_2010_01_054-081.pdf
- Hanke, E., Hehner, S., & Bikner-Ahsbahs, A. (2021). Reducing fragmentation in university pre-service teacher education: Conditions and strategies. *EDeR - Educational Design Research*, 5(2). [dx.doi.org/10.15460/eder.5.2.1613](https://doi.org/10.15460/eder.5.2.1613)
- Hannon, J., Hocking, C., Legge, K., & Lugg, A. (2018). Sustaining interdisciplinary education: Developing boundary crossing governance. *Higher Education Research & Development*, 37(7), 1424-1438. <https://doi.org/10.1080/07294360.2018.1484706>
- Haque, S. A. A., Iqbal, H., Siddique, N., & Saeed, A. (2020). Locating cultural hegemony: A Marxist analysis of Home Fire. *PalArch's Journal of Archaeology of Egypt/Egyptology*, 17(9), 7925-7938. <https://archives.palarch.nl/index.php/jae/article/download/5676/5576>
- Haralambos, M., Holborn, M., Chapman, S., & Moore, S. (2013). *Sociology: Themes and perspectives*. (8th ed.). HarperCollins.
- Hellman, M. (2015). The compartmentalisation of social science: What are the implications? *Nordic Studies on Alcohol and Drugs*, 32(4), 343-346. <https://doi.org/10.1515/nsad-2015-00>
- Hennink, M., Hutter, I., & Bailey, A. (2020). *Qualitative research methods*. (2nd edition). Sage.

- Henry, S. (2005). Disciplinary hegemony meets interdisciplinary ascendancy: Can interdisciplinary/integrative studies survive, and if so, how? *Issues in Integrative Studies*, 23, 1-37. https://interdisciplinarystudies.org/wp-content/issues/vol23_2005/03_Vol_23_pp_1_37.pdf
- Herrmann, A. F. (2017). Hegemony. In C. R. Scott, & L. Lewis (Eds.), *The international encyclopedia of organizational communication* (pp. 1-6). John Wiley & Sons. <https://doi.org/10.1002/9781118955567.wbieoc094>
- Herrón, M. A. (2010). Epistemology and epistemic cognition: The problematic virtue of relativism and its implications for science education. *Zona Próxima*, (12), 96-107. <https://www.redalyc.org/pdf/853/85316155006.pdf>
- Hibbert, K., Lingard, L., Vanstone, M., Kinsella, E. A., McKenzie, P., Pitman, A., & Wilson, T. D. (2014). The quest for effective interdisciplinary graduate supervision: A critical narrative analysis. *Canadian Journal of Higher Education*, 44(2), 85-104. <https://ir.lib.uwo.ca/fimspub/155>
- Hoadley, U., Jansen, J., Reed, Y., Gultig, J., & Adendorff, M. (2012). *Curriculum: Organising knowledge for the classroom* (3rd edition). Oxford University Press.
- Hungwe, K. (2007). Language policy in Zimbabwean education: Historical antecedents and contemporary issues. *Compare*, 37(2), 135-149. <https://www.tandfonline.com/doi/abs/10.1080/03057920601165363>
- Hwang, N., & Kisida, B. (2021). Spread Too Thin: The effects of teacher specialization on student achievement. *EdWorkingPaper* No. 21-477, 1-31. <https://files.eric.ed.gov/fulltext/ED616725.pdf>
- Jablon-Roberts, S., & McCracken, A. (2022). Undergraduate student perceptions of industry guest speakers in the college classroom. *Journal of the Scholarship of Teaching and Learning*, 22(3), 76-88. <https://doi.org/10.14434/josotl.v22i3.32317>
- Jaques, C., Islar, M., & Lord, G. (2019). Post-truth: Hegemony on social media and implications for sustainability communication. *Sustainability*, 11(7), 2120, 1-16. <https://doi.org/10.3390/su11072120>
- Kasembe, R. (2011). Teaching science through the science technology and society (STS) lens in Zimbabwe high schools: Opportunities and constraints. *Zimbabwe Journal of Educational Research*, 23(3), 314-348.
- Kidron, A., & Kali, Y. (2015). Boundary breaking for interdisciplinary learning. *Research in Learning Technology Journal*, 23, 1-17. doi: <https://doi.org/10.3402/rlt.v23.26496>
- Kizel, A. (2016). Philosophy with children as an educational platform for self-determined learning. *Cogent Education*, 3(1), 1-11. <https://doi.org/10.1080/2331186X.2016.1244026>
- Korthagen, F., Loughran, J., & Russell, T. (2006). Developing fundamental principles for teacher education programs and practices. *Teaching and teacher education*, 22(8), 1020-1041. <https://doi.org/10.1016/j.tate.2006.04.022>
- Liebel, G., Burden, H., & Heldal, R. (2017). For free: Continuity and change by team teaching. *Teaching in Higher Education*, 22(1), 62-77. <https://doi.org/10.1080/13562517.2016.1221811>
- MacDonald, S., & Headlam, N. (2011). *Research methods handbook. Introductory guide to research methods for social research*. Manchester: Centre for Local Economic Strategies. <https://cles.org.uk/wp-content/uploads/2011/01/Research-Methods-Handbook.pdf>
- Magoma, C. M. (2016). The shift and emphasis towards curriculum integration: Meaning and rationale. *African Educational Research Journal*, 4(2), 25-30. <https://files.eric.ed.gov/fulltext/EJ1216181.pdf>
- Mandiudza, L., Chindedza, W., & Makaye, J. (2013). Vocationalization of secondary schools: Implementation reality or fallacy? *European Journal of Sustainable Development*, 2(1), 123-132. <https://doi.org/10.14207/ejsd.2013.v2n1p123>

- Mandl, H., Gruber, H., & Renkl, A. (1993). Misconceptions and knowledge compartmentalization. In *Advances in psychology*, 101, 161–176. Elsevier. [https://doi.org/10.1016/S0166-4115\(08\)62657-6](https://doi.org/10.1016/S0166-4115(08)62657-6)
- Manenji, B. (2016). *Impact of the director's circular no 36 of 2006 on the assessment and evaluation of teaching and learning in accounts at Ordinary Level in Mbare Secondary Schools* [Unpublished BEd dissertation]. Midlands State University. <https://cris.library.msu.ac.zw/bitstream/11408/2307/1/MANENJI.pdf>
- Mangwaya, E., Mangwaya, E., & Shoko, S. (2023). Wither pre-service teacher education in Zimbabwe? Object lessons from teacher education systems in the United Kingdom, United States and South Africa. *Journal of Education and Culture Studies* 7(3), 55–69. <https://doi.org/10.22158/jecs.v7n3p55>
- Mariën, D., Vanderlinde, R., & Struyf, E. (2023). Teaching in a shared classroom: Unveiling the effective teaching behavior of beginning team teaching teams using a qualitative approach. *Education Sciences*, 13, 1075. <https://doi.org/10.3390/educsci13111075>
- Maton, K. (2014). *Knowledge and knowers: Towards a realist sociology of education*. Routledge. <https://doi.org/10.4324/9780203885734>
- Mavundutse, O. (2004). Stress antecedents among student-teachers. *The Zimbabwe Bulletin of Teacher Education*, 13(1), 4–20.
- McElreavy, C., Tobin, V., Martin, T., Damon, M. B., Crate, N., Godinez, A., & Bennett, K. (2016). The history of the academy and the disciplines. *Interdisciplinary Studies: A Connected Learning Approach*. <https://press.rebus.community/idsconnect/front-matter/introduction/>
- Mhlolo, M. K. (2014). Theory-practice dichotomy in mathematics teacher education: An analysis of practicum supervision practices at one teachers' training college in Zimbabwe. *Zimbabwe Journal of Educational Research*, 26(1), 34–53. <https://www.ajol.info/index.php/zjer/article/view/101666>
- Ministry of Primary and Secondary Education. (2015). *Curriculum framework for primary and secondary education 2015–2022*. Ministry of Primary and Secondary Education.
- Miseliunaite, B., Kliziene, I., & Cibulskas, G. (2022). Can holistic education solve the world's problems: a systematic literature review. *Sustainability*, 14, 9737. <https://doi.org/10.3390/su14159737>
- Mkoba Teachers College. (2019). *Train as primary school teachers starting in January, 2020: Intake 20*. <https://www.facebook.com/mkobatc>.
- Montes-Rodríguez, R., Martínez-Rodríguez, J. B., & Ocaña-Fernández, A. (2019). Case study as a research method for analyzing MOOCs: Presence and characteristics of those case studies in the main scientific databases. *The International Review of Research in Open and Distributed Learning*, 20(3), 59–79. <https://doi.org/10.19173/irrodl.v20i4.4299>
- Mpofu, P., & Salawu, A. (2018). Re-examining the indigenous language press in Zimbabwe: Towards developmental communication and language empowerment. *South African Journal of African Languages*, 38(3), 293–302. <http://dx.doi.org/10.1080/02572117.2018.1518036>
- Mswazie, J., & Gamira, D. (2011). Transforming teacher education: The quest for a unified primary teacher education in Zimbabwe. *Journal of Sustainable Development in Africa*, 13(4), 410–422. https://jsd-africa.com/Jsda/Vol13No4_Summer2011_B/PDF/Transforming%20Teacher%20Education1.pdf
- Mudavanhu, Y. (2014). *The contribution of theory and practice to the professional development of students learning to become secondary school teachers in Zimbabwe* [Unpublished doctoral thesis]. University of Exeter. <https://www.proquest.com/openview/acbf150a1ecaecca2c0612984c4c19fe/1?pq-origsite=gscholar&cbl=51922&diss=y>

- Mukorera, M. (1999). Defining professional studies and its place in the teacher education curriculum. *The Zimbabwe Bulletin of Teacher Education*, 2(2), 34–50. <https://ir.uz.ac.zw/handle/10646/1936>
- Ndhlovu, Z. B., Nkhata, B., Chipindi, F. M., Kalinde, B., Kaluba, C., Malama, E., Mambwe, R., Bwalya, K., Lufungulo, E. S., & Chipande, H. (2021). Subject specialisation in primary school: A theoretical review and implications for policy and practice in Zambia. *Journal of Curriculum and Teaching*, 10(4), 13–24. <https://doi.org/10.5430/jct.v10n4p13>
- Ndlovu, S. (2018). Colleges to integrate science teacher training. *The Herald*, 23 April 2018. [Online]. <https://www.herald.co.zw/3-colleges-to-integrate-science-teacher-training/>
- Nhongo, R. (2013). A national language policy for Zimbabwe in the twenty-first century: Myth or reality? *Journal of Language Teaching & Research*, 4(6), 1208–1215. <https://doi.org/10.4304/jltr.4.6.1147-1159>
- Nziramasanga, C. T. (1999). *Report of the presidential commission of inquiry into education and training*. Harare, Zimbabwe: Government Printers.
- Ottewill, R., McKenzie, G., & Leah, J. (2003). *From vicious circle to virtuous circle: Overcoming compartmentalisation in management learning* (Discussion Papers in Management, M03-9). University of Southampton.
- Ottewill, R., McKenzie, G., & Leah, J. (2005). Integration and the hidden curriculum in business education. *Education+ Training*, 47(2), 89–97. <https://doi.org/10.1108/00400910510586515>
- Paynton, S. T., & Hahn, L. K. (2021). 5.9: *Critical theories paradigm*. [https://socialsci.libretexts.org/Bookshelves/Communication/Introduction_to_Communication/Introduction_to_Communication_\(Paynton_and_Hahn\)/05%3A_A_Communication_Theory/5.09%3A_A_Critical_Theories_Paradigm](https://socialsci.libretexts.org/Bookshelves/Communication/Introduction_to_Communication/Introduction_to_Communication_(Paynton_and_Hahn)/05%3A_A_Communication_Theory/5.09%3A_A_Critical_Theories_Paradigm)
- Perry, W. G. Jr. (1999). *Forms of ethical and intellectual development in the college years: A scheme*. Jossey-Bass.
- Petri, L. (2010). Concept analysis of interdisciplinary collaboration. *Nursing Forum*, 45(2), 73–82.
- Reeves, M. (1988). *The crisis in higher education: Competence, delight and the common good*. Open University Press.
- Rudhumbu, N., & Mudau, P. K. (2022). Entry requirements as predictors of the academic performance of postgraduate students in universities in Zimbabwe. *International Journal of Learning, Teaching and Educational Research*, 21(2), 89–106. <https://doi.org/10.26803/ijlter.21.2.6>
- Saif, P., & Reba, A. (2017). A comparative study of subject knowledge of B. Ed graduates of formal and non-formal teacher education systems. *Journal of Education and Educational Development*, 4(2), 270–283. <http://dx.doi.org/10.22555/joed.v4i2.1354>
- Santos, C. M., Franco, R. A., Leon, D., Ovigli, D. B., & Colombo Júnior, P. D. (2017). Interdisciplinarity in education: Overcoming fragmentation in the teaching-learning process. *International Education Studies*, 10(10), 71–77. <https://doi.org/10.5539/ies.v10n10p71>
- Seawright, J., & Gerring, J. (2008). Case selection techniques in case study research: A menu of qualitative and quantitative options. *Political Research Quarterly*, 6(2), 294–308. <https://doi.org/10.1177/1065912907313>
- Sharma, G. (2017). Pros and cons of different sampling techniques. *International Journal of Applied Research*, 3(7), 749–752. <https://www.allresearchjournal.com/archives/2017/vol3issue7/PartK/3-7-69-542.pdf>
- Syukur, M. (2019). Hegemonic practices of upperclassmen to freshmen within college life. *Society*, 7(2), 71–82. <https://doi.org/10.33019/society.v7i2.112>

- The Zimbabwe Mail. (31 January 2018). 'Scrap Maths': Relax college entry requirements: Minister. *The Zimbabwe Mail*.
<https://www.thezimbabwemail.com/education/scrap-maths-relax-college-entry-requirements-mininister/>
- Thomas, R. (2013). *Science's harmful power* [Unpublished master's dissertation]. Rollins College. <http://scholarship.rollins.edu/mls/39>
- Trowler, P. (2014). Depicting and researching disciplines: Strong and moderate essentialist approaches. *Studies in Higher Education*, 39(10), 1720–1731. <http://dx.doi.org/10.1080/03075079.2013.801431>
- University of Zimbabwe (2024). *Undergraduate Admissions*. <https://www.uz.ac.zw/index.php/admissions/undergraduate#:~:text=All%20applicants%20MUST%20have%20passed,two%20'A'%20Level%20passes.&text=Applicants%20are%20also%20required%20to,complete%20and%20submit%20the%20application>
- Van Merriënboer, J. J. G., & Kirschner, P. A. (2017). *Ten steps to complex learning: A systematic approach to four-component instructional design* (3rd edition). Routledge. <https://doi.org/10.4324/9781315113210>
- Walliman, N. (2021). *Research methods: The basics* (3rd edition). Routledge.
- Winberg, C., & Hollis-Turner, S. (2021). Practical subjects in the vocational curriculum: A critical review of the literature. *Journal of Education (University of KwaZulu-Natal)*, (85), 7–28. <https://orcid.org/0000-0001-6234-7358>
- Winkler, H. (2020). Towards a theory of just transition: A neo-Gramscian understanding of how to shift development pathways to zero poverty and zero carbon. *Energy Research & Social Science*, 70, 101789. <https://doi.org/10.1016/j.erss.2020.101789>
- Zimbabwe National Statistics Agency (ZIMSTAT). (2021). *Fourth quarter quarterly labour force survey*. Harare, Zimbabwe: Zimbabwe National Statistics Agency (ZIMSTAT). https://www.zimstat.co.zw/wp-content/uploads/2023/02/2021_Fourth_Quarter_QLFS_Report_8032022.pdf