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An Employability Thermostatic Framework for Enhancing Graduate Teacher Employability in an Evolving Labour Market

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Abstract: *Enhancing graduate teacher employability has become a critical concern for educational institutions and policy-makers globally. This article anchored on three pillars of theory, thermostatic principles and mathematical predictions explored the development of an employability framework to improve the career prospects of graduate teachers. Further, the system approach, transformative, human capital and the skills development theories were intergrated into the early developments of the framework. Both the principles of an electric thermostatic properties and the transformative equation were used to strengthen the relevancy of the framework. By integrating these competencies into teacher education programs, the study advocates for a transformative and holistic approach that not only focuses on academic knowledge but also on practical skills and personal attributes. Grounded theory was used as the study methodology to develop an employability thermostatic framework that has capabilities to sense, regulate, control and give relevant feedback. Further, this article navigates through the process of developing the framework which documented a great tool that revolutionizes graduate teacher employability in the most novel and contemporary manner. The employability thermostatic framework offers a structured model for evaluating and enhancing graduate teachers' readiness for the robust employability. Through a combination of curriculum reforms, industry partnerships, and professional development opportunities, the framework aims to bridge the gap between academic preparation and job market demands. The findings further suggest that a transformative employability thermostatic framework provides a comprehensive approach in solving the problem of graduate teacher employability on the labour market. This article contributes to the ongoing discourse on teacher employability in the most innovative manner that challenges the traditional measures and approaches.*

Keywords: employability, thermostatic framework, graduate, education, grounded theory, transformative theory.

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INTRODUCTION

Employability models and frameworks significantly contribute to graduate employability by providing a structured approach to skill development and career preparedness (MOE 2022. UNESCO 2021; OECD 2020). They enhance the alignment of education with labor market needs, facilitate career support services, promote both hard and soft skill development, and encourage ongoing personal development. With the evolving nature of the labor market, these frameworks are essential in preparing graduates for success in their careers (Zhou 2022, Mumba & Phiri 2019).

Employability models and frameworks play a crucial role in enhancing graduate employability by providing a structured understanding of the skills, competencies, and behaviors that are essential for success in the labor market (MOE 2023, Mulenga & Phiri 2021). These frameworks can guide higher institutions of learning, policy makers, planners, regulatory authorities, government specialized agencies and graduates in developing the right competencies, offering employers a clear guide for recruitment, and supporting educational institutions in aligning curricula to the changing demands of the job market (Mulenga & Mwanza 2020, WEF 2020, World Bank 2021).

In recent years, the evolving landscape of labor markets, driven by rapid technological advances and global economic shifts, has led to innovative and creative approaches to enhancing graduate employability through various frameworks (ILO 2022, World bank 2020). These innovations are responding to the dynamic needs of employers, aiming to equip graduates with both the technical and soft skills needed to thrive in the workforce.

The latest innovations and creativity in employability frameworks focus on digital literacy, global employability, work-based learning, and soft skills development. These advancements make use of cutting-edge technologies like AI, gamification, and data analytics to personalize career development and ensure that graduates are well-equipped for the complexities of the labor market (OECD 2023, UNESCO 2019). By integrating industry needs, technological skills, emotional intelligence, and resilience, these frameworks empower graduates to enhance their employability and adapt to the evolving world of work (WEF 2020; OECD 2021).

Current and future contributions of frameworks to Graduate employability

With the rise of digital transformation in various industries, there has been a significant emphasis on integrating digital skills into employability frameworks (UNESCO 2021, ILO 2023, WEF 2021). Recent frameworks, like the European e-Competence Framework (e-CF), identify key digital competencies that graduates should develop to remain competitive in a technology-driven labor market (MOE 2020, UNESCO 2020). The e-CF focuses on skills related to digital literacy,

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data management, software development, cybersecurity, and AI-related technologies. These frameworks aim to foster the competencies needed for graduates to adapt to technological disruptions, particularly in industries like finance, healthcare, and education (European Commission, 2023).

Moreover, a focus on digital employability is expanding with a specific emphasis on digital communication, online presence management, and data analytics skills. For instance, research by Vassileva et al. (2022) highlights how online platforms, such as LinkedIn, and digital tools for portfolio creation are being integrated into university career services, enabling graduates to showcase their digital competencies directly to potential employers.

More recent Innovative approaches are also utilizing gamification and AI-powered tools for skills assessment and development. Platforms like LinkedIn Learning have incorporated gamification into their learning modules, providing students with interactive scenarios and skill-building exercises (Clark 2018). These platforms allow graduates to build and demonstrate soft skills, such as leadership and decision-making, in simulated environments, thus increasing their readiness for real-world challenges. AI tools like Skillmeter are becoming increasingly popular for assessing soft skills like adaptability and emotional intelligence, providing personalized feedback to graduates (Kallen, 2023).

Recent frameworks are being designed to address diversity in the graduate population, ensuring that all students—regardless of their backgrounds—have access to employability support. An example is the Inclusive Employability Framework, which considers factors such as socio-economic status, race, gender, and disability when developing employability interventions (Miller & Griffin, 2023). This framework aims to provide targeted resources for underrepresented groups, ensuring that all graduates have equitable opportunities to succeed in the labor market.

Innovative approaches also integrate the globalization of labor markets, recognizing that students may seek employment opportunities in diverse international settings. The Global Employability Skills Framework, developed by the International Labour Organization (ILO), provides a comprehensive structure to prepare graduates for global work environments, focusing on cross-cultural communication, international collaboration, and understanding of global economic trends (ILO, 2022).

Instead of a one-size-fits-all approach, new frameworks emphasize personalized career development. For instance, the Career Development Learning Framework at many universities uses data analytics to monitor student progress and provide tailored career advice. This framework is based on insights drawn from individual student data—such as coursework, extracurricular

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activities, and internships—allowing for custom recommendations on skill development and networking opportunities (Hughes & McGowan, 2022).

Innovative frameworks now place a stronger focus on work-integrated learning (WIL), linking academic education with industry practice (York 2006). The Work-Based Learning Employability Framework (WBLEF) encourages universities to partner with industry to offer students internships, apprenticeships, and co-operative education programs. These programs enable students to gain hands-on experience, applying theoretical knowledge in real-world contexts. Research shows that students who complete WIL experiences have significantly higher rates of employment after graduation (Jackson, 2023).

Additionally, micro-credentials and digital badges are increasingly being used as part of work-based learning frameworks to recognize skills obtained during internships, short-term projects, or digital learning modules. These micro-credentials can be shared on platforms like LinkedIn, offering evidence of specific competencies to prospective employers (McGill et al., 2023).

The Employer-Driven Employability Framework emphasizes partnerships between educational institutions and employers. This approach ensures that the skills being taught in the classroom are closely aligned with the needs of employers (UNESCO 2020). A notable example is the Engage Employability Framework developed by The Association of Graduate Careers Advisory Services (AGCAS) in the UK, which links students with industry experts to enhance their career readiness (AGCAS, 2022, MOE 2024). These frameworks prioritize employer-led innovation, where companies collaborate in shaping curricula and providing real-time feedback on the skills they value most.

Innovations in employability frameworks increasingly recognize the importance of emotional intelligence (EI). Frameworks are focusing on the development of EI as a vital component of employability, equipping graduates with the skills necessary to manage emotions, communicate effectively, and navigate workplace challenges (UNESCO 2013). For example, the Emotional Intelligence Employability Framework (EIEF) integrates EI into both academic learning and extracurricular activities, fostering attributes such as self-awareness, empathy, and social skills (Salovey & Mayer, 2022).

In response to the uncertain labor market caused by economic downturns and global disruptions (like the COVID-19 pandemic), resilience and adaptability have become key components of employability frameworks. The Resilience-Based Employability Framework encourages students to develop coping strategies for dealing with failure, setbacks, and workplace challenges. This model emphasizes mental health, stress management, and adaptive thinking as critical for long-term career success (Lester, 2023).

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Recent innovations in employability frameworks also focus on the value of peer-led learning and networking. Collaborative platforms, where students engage with peers or alumni in a mentorship ecosystem, are gaining popularity (Redmond et al 2022). These platforms, such as GradMentor, connect students with mentors who provide guidance and industry insights. Peer learning fosters critical thinking, teamwork, and leadership skills, which are all essential components of employability (Sweeney, 2022, Borld Bank 2018).

METHODOLOGY AND FINDINGS

This article used grounded theory as research methodology. Grounded theory is a widely used qualitative research methodology that emphasizes the generation of theory from data rather than testing existing theories. Its primary justification for proper research lies in its systematic approach to data collection, analysis, and theory development (Strauss 2008). The core justification for grounded theory is its ability to generate new theories grounded in empirical data hence suitable in the development of new framework. Grounded theory, on the other hand, inductively generates new concepts and theories that may not have been anticipated. This allows researchers to explore phenomena without being constrained by pre-existing assumptions, potentially uncovering novel insights

Grounded theory is highly flexible and iterative, which makes it particularly useful for exploring complex, under-researched phenomena (Strauss & Corbin 1998). The process of constant comparison, where new data are compared with emerging categories, ensures that the findings evolve throughout the study. This iterative approach fosters a deeper understanding of the subject matter and encourages continuous refinement of the theory (Corbin & Strauss 2008).

One of the most compelling justifications for grounded theory is its data-driven nature. Since the theory emerges directly from the data, the research remains closely connected to the real-world context and the experiences of participants (Charmaz 2006). This is particularly valuable in fields like social sciences, where understanding the perspectives of participants is crucial. The key informants included human resources officers, graduate teachers, University staff and the ministry of Education Officials. Grounded theory ensures that the research is not biased by the researcher's preconceptions or existing theories

Grounded theory has practical significance because it is designed to develop theories that are not only theoretical but also practically applicable in real-world settings. Since grounded theory is rooted in the experiences of participants, the resulting theory often offers insights that are directly relevant to practitioners and policymakers (Corbin & Strauss 2008)

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Developing an Employability Thermostatic Framework using Grounded Theory

Grounded theory is a qualitative research method that allows researchers to develop theories directly from raw data rather than relying on the pre-existing frameworks (Cresswell & Plano 2017). It can be established that Grounded theory ensures that the framework created is data driven, practical and responsive to the real labour needs (Clark 2018, Crewel 2018). It comes with some specific stages that are interconnected thereby helping the researcher to use both deductive and inductive techniques to new theories, concepts or frameworks. This article, on stage one, defined clearly the focus on the graduate teacher education and employability. All the key variables that determine the relationship between education and employability were clearly identified. Using theoretical sampling techniques data was collected from the key informants that included the graduate teachers, the employers and the university staff such a school deans, lecturers and heads of departments. The main data collection methods included interviews, focused group discussions and documents analysis. The collected data was later analysed using open coding, axial coding and selective coding. This process involved first the identification of key themes from raw data, then finding and tracing relationships amongst them. This stage was followed by systematic identification of core categories that integrated and fused all the common and emerging themes to assist draw logical conclusions guided by data patterns. Therefore, after the coding, clear patterns emerged that informed my employability frameworks operating on the concept of thermostatic principles. The reviews of the related literature on the key models and frameworks showed that the main gaps in the current literatures on frameworks could not produce the tetra pattern of sensing, detecting for the minimum and maximum levels, regulations and control all fitting into a single framework matrix. The main theories that guided the development of the employability thermostatic framework included the human capital theory, system theory, transformative theory and the skills development theory. The data collected indicated that the most effective framework houses all the four properties in a single structure and performs the integrated-functions in the systematic and coordinated manner just like an electrical thermostatic framework of an electrical appliance on some devices such as an electrical kettle, fridge or domestic heater.

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No.	Skills	Identified Quality	Description	Remarks
1.	Skills development theory	Sensing	Refers to the property to sense, detect availability of relevant skills, labour needs, demand and supply dynamics	Proactive detection
2.	System Approach Theory	Regulations	This brings out the levels of maximum and minimum predetermined levels of skills in terms of supply and demand. A specified range of availability is calibrated in most scientific manner.	Maintaining limits
3.	Transformative theory	Control	This is the capability to use the automatic indicators to signal the levels of required limits based on the maximum and minimum limits	Prevents overloads & underloads
4.	Human capital theory	Feedback Mechanism	Using the human capital an appropriate action is recommended and taken in order to secure maximum compliance to the requirement as reflected in the in-built mechanisms.	Automatic reporting

Reviews of the Main Theories Underpinning the study

From the above table, we can observe that the skills development theory significantly plays the role of the sensing and detection of the variety, nature and quantities of the skills available on the labour market. the system approach on the other hand indicates the bench-marks between the lower and the upper limits to avoid over-loads or underloads in a systematic pre-programmed fashion. This theory helps to standardize all the systems and processing therefore performing the regulatory roles in an organised fashion. Control mechanisms are facilitated by the transformative theory which is essentially an innovative way of protecting the integrity of the system, in this particular situation the labour market. This could also be compared to the roles that a fuse plays in an electrical appliance. The human capital theory on the other hand provides robust feedback mechanism in form of decision making, policy interventions as well as the human capital skills for effective management of the labour market. There is a central bureau of employment that has been recommended to ensure that it provides coordinated management of the employability within a nation. At the centre of the bureau of employment office are highly trained staff managing integrated information in order to optimize the management of the labour supply and demand.

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Qualitative Findings on Employability Framework Information

<table>
<tr><td colspan="4">(a)What are the main factors that determine graduate teacher employability on the labour markets?</td></tr>
<tr><td>A</td><td>Keywords</td><td>Near themes</td><td>Emerging themes</td></tr>
<tr><td></td><td>a) Funded vacancies
b) attrition
c) change in institutional size
d) Number of institutional trainings
e) Graduate Production per year
f) Number of institutions employing
g) Economic performance
h) Political will
i) Employment policy</td><td>i. Skills
ii. Resources
iii. policy</td><td>▪ supply & demand
▪ relevant skills
▪ government consideration</td></tr>
<tr><td></td><td colspan="3">Verbatims-17.08.2023: “The government has a big voice in the recruitment of graduates on the labour markets” (T5, 2023).
“The skills, supply, demand and economic factors play a big role in determining graduate employability on the labour markets” (T3, 2023)</td></tr>
<tr><td colspan="4">(b)What are the relationships that exist amongst these variables determining graduate teacher employability?</td></tr>
<tr><td></td><td>Keywords</td><td>Near themes</td><td>Emerging themes</td></tr>
<tr><td></td><td>i. Attrition & supply
ii. Production & supply
iii. vacancies & skills
iv. supply& demand</td><td>Production & demand
Supply & demand
Local need & skills</td><td>▪ Supply and demand
▪ Enrollments and production from HEI
▪ Skills and local needs</td></tr>
<tr><td></td><td colspan="3">Verbatims: “The labour supply and demand have direct effects on graduate employability” (T10, 2023)
“The relevant skills should be matching with specific local needs on the labour markets.”(T8, 2023)</td></tr>
<tr><td colspan="4">(c) What are the possible results emanating from the relationships existing amongst the key variables that determine graduate Teacher employability on the labour markets?</td></tr>
<tr><td></td><td>Keywords</td><td>Near themes</td><td>Emerging themes</td></tr>
<tr><td></td><td>i. Increased demand
ii. Reduced supply
iii. Rivalry & competitiveness
iv. Low wages & income
v. Policy reviews
vi. Government regulations</td><td>a) Supply and demand

b) Net number of graduates</td><td>Predict Labour supply and demand

Control Labour surplus, demand, & deficit</td></tr>
</table>

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	vii. Nature of labour laws on labour markets viii. The political & economic influences.	c) Number of HEIs d) Graduate retention	Enhanced decision-making process
	Verbatims-2023: "High labour supply may cause high levels of unemployability more especially when the economy is small."(T12,2024) " The government consideration, policy frameworks and political will have a big influence on graduate employability."(T7,2023)		

Open Coding, Axia Coding and Selective Codings

The emerging themes from the qualitative coding above may be summaries in terms of key variables that determine employability, the linkages between the key variables, the relationships and the results or effects of the associations amongst the key variables (Clark 2018, Miller & Griffins 2023). These variables were further analysed in terms of the system approach containing inputs, processes and outputs. The table below summaries all the emerging variables and the corresponding relationships amongst them.

Summaries of the Emerging Themes on Employability Framework

Determinants Variables	**Linkages**	**Relationships**	**Effects/Outcomes**
▪ Supply & demand ▪ skills & local needs ▪ underlying factors ▪ employment policies	Recruitment and attrition Labor supply and demand Skills availability and vacancies	▪ Supply and demand ▪ Inputs and outputs ▪ Skills and local needs	i. Predict Labour supply and demand ii. Control Labour surplus, demand, & deficit iii. Enhanced decision-making process iv. Graduate employability

From the above variables, it can observe that a consolidated network is being formed. When this data is populated into a system approach where organs and institutions are strategically inserted, we begin to see more logical and completed shape of the employability framework with clear visible and invisible relationships. Each block above feeds into the defined structure which in turn

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feeds the next one and eventually we see the flow of the interdependences amongst variables. When all the dotted lines are inter-connected and labeled, we begin to get the complete employability framework as indicated below. The key institutions at the centre of the employability matrix framework include the higher institutions of learning, regulatory agencies and policies, central bureau of employment, employers and their representatives and the government arms in terms of the supervision oversight and the enforcement part.

Analysis of Statistical Variables

No.	Identified Key Variables	Symbol	Values	Values	Values
1.	Average annual Graduates	nG	1000	6,455	10,000
2.	Graduate Attrition	nA	105	135	385
3.	Constant	Q	1	1	1
4.	Vacancies	nV	295	309	1,355
5.	Change in Facility	F	3	3	3
6.	Personal Skills	nS	125	130	182
7.	Higher Learning Institution	nF	35	58	46
8.	Equilibrium Thermostatic	ET	74,645	86,660	502,835

The above table shows the main variables identified from the article and they include the total number of graduates produced each year, the net attrition, the vacancies, rate of change in facility sizes, personal skills, number of the institutions involved in training graduates, and the constant value. When all the values are analysed further, they tend to give more consistent findings with respect to the relationships existing amongst them. Both supply and demand may be computed from the above statistics.

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Perceptions on how Graduate Teachers Can be Enhanced for Employability

How can graduate teacher education be enhanced for improved employability on the Labour Markets?					
Descriptive Statistics					
Sno.		**N**	**Mean**	**Std. Deviation**	**Remarks**
1.	There is need to Link GTE Education to multiple specializations	679	4.13	1.208	Agreed
2.	There is need to improve the quality and standards for GTE	679	3.57	1.274	Agreed
3.	Govt needs to regulate more closely all Higer education Institutions	679	3.83	1.364	Agreed
4.	GTE needs to mentor graduates to become employers	679	4.52	1.159	Agreed
5.	Govt. needs to regulate enrollments & outputs in Higher institutions of learning	679	4.170	1.325	Agreed
6.	We must stop producing graduate teachers for now.	679	2.01	1.670	Did not agree
7.	GTE must be enhanced with more course contents rich in Practice	679	3.20	1.175	Neutral
8.	GTE needs impart more skills in innovation, research & creativity	679	2.90	1.168	Neutral
9.	GTE needs to impart more comprehensive skills in entrepreneurship?	679	4.57	1.188	Agreed
10.	There is need for upskilling & reskilling for graduates.	679	4.42	1.105	Agreed
11.	There is need to introduce more foreign language skills.	679	4.69	1.971	Agreed
	Average Mean Score	**679**	**2.47**	**1.327**	

The table above explored the perception of graduate teachers concerning what could be done to enhance graduate teachers' education for employability on the labor markets. It was perceived that there was need to introduce more of the international foreign language skills, comprehensive entrepreneurial skills, upskilling and reskilling of teachers while at the same time paying more attentions to the strict regulations of higher learning institutions. There is need to improve on the standards and quality of the graduate teacher education while at the same developing a transformative graduate education system that would lay more emphasis on mentoring teachers more into becoming employers rather than being employees. Skills mismatch may be addressed by linking specific graduate teachers' specializations to specific local needs requirement in the consistent and continuous manner

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Summary of the system Approach Variables

Inputs	**Processes**	**Outputs**	**Feedback**
Students, Employee, Community, Education Finances Skills	Education Training Curriculum Development Research Innovations Critical Thinking	Skill Graduates Skilled Workers Employability Levels Economic Development High Quality of Life	Regulatory Structures Government Agencies Information Centres Strategic Audits Reports Monitoring & Evaluations

When we factor in the system approach and insert the main institutions responsible for the main variables highlight in the above two tables a more complete system is being developed. The main institutions that can be inserted into the system approach are only those that are prominent and critical in the process of education, training, regulations, governance and employability. In view of this understanding, we can confidently mention the higher learning institutions, the Government (which comprises the ministry of education, the higher education authority, the teaching commission, teaching council, ministry of finance), the community, the central bureau of employment (proposed new structure) and the employing institutions such as schools and other learning/teaching institutions. These institutions are all interconnected in a web of relationship. Each has a specific function to play. Therefore, the complete graduate teacher employability framework is indicated in the subsequent table below.

Identified Gaps in the existing Models, Frameworks & Theories

A robust literature reviews were conducted on theories, models, emperical studies and frameworks on graduate teacher employability. Many empirical studies were analysed and assessed. The main gaps identified from the reviews after the thoroughly investigations confirmed that despite having so many positive features on several employability frameworks, what was not addressed however in theses frameworks were the ability to monitor, sensing, setting clear target indicators, responsive adjustments and feedback mechanism in a more robust and effective manner. It was observed that some models, frameworks or theories could have one or two of the identified key result areas but could not house all the properties above in a single framework. In view of this discovery, the researcher decided to integrate all the missing elements into a single framework. Most of the identified gaps resembled that of an electric thermostatic capability(M-S-R-F). integrating all the four properties produces the most favorable results anchoring on thermostatic technological principles (Kallen 2023, Glasser & Strauss 1987, Mc Grath et al 2023). The MSRF characteristics simply means M-monitors, S-sensing, R-responsive and F-feedback. Below is the table summarizing the literatures gaps identified.

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Summaries of Literature Gaps on frameworks/Models/Theories

Reviews of literature (Models, frameworks, theories & empirical studies)	Identified Gap	Definition	Remarks
Human capital theory, transformative employability framework, system approach, UKCES Employability skills framework	**M-Monitoring**	The ability to closely monitor key variables that determine employability on the labour markets	Integrated Framework
OECD Skills Strategy, WHO Employability Strategy, Supers, Life span theory	**S-Sensing (clear targets**	This is the capability to accurately measure the minimum and maximum numbers that the labour market can absorb(graduates) at a given time in terms of labour supply & demand.	Integrated framework
Hollands theory of career choice, trait & factor theory, skills development framework, community of practice frameworks	**R-Responsive**	Refers to the ability to pick the accurate information and trigger a signal for an appropriate action	Integrated framework
Pedagogical content knowledge model, transformative learning models, employability pyramid model, ABC Employability Models	**F-Feedback**	Proactive and correct action required to address a specific need within the identified system.	Integrated framework

Integrations of the Thermostatic Concept into Employability Framework

This framework is envisioned to be anchored on four integrated pillars for the purpose of delivering the predetermined functions. The reviews of the literature clearly showed that there are mainly four conspicuous gaps in the current systems relating to graduate teacher employability. I can confidently indicate the gaps relate to the missing ability to conduct monitoring in real time for the whole value chain of graduate employability, regulations of calibrated targets, responsive adjustments and the feedback mechanism. These four identified gaps correspond to the electric thermostatic appliance used in electric appliances such an electric kettle, fridge or an electric fan. Based on the fact that the identified literature gaps perfectly corresponded to the functionality of the different sections of the electric thermostatic appliance, the new framework adopts not only

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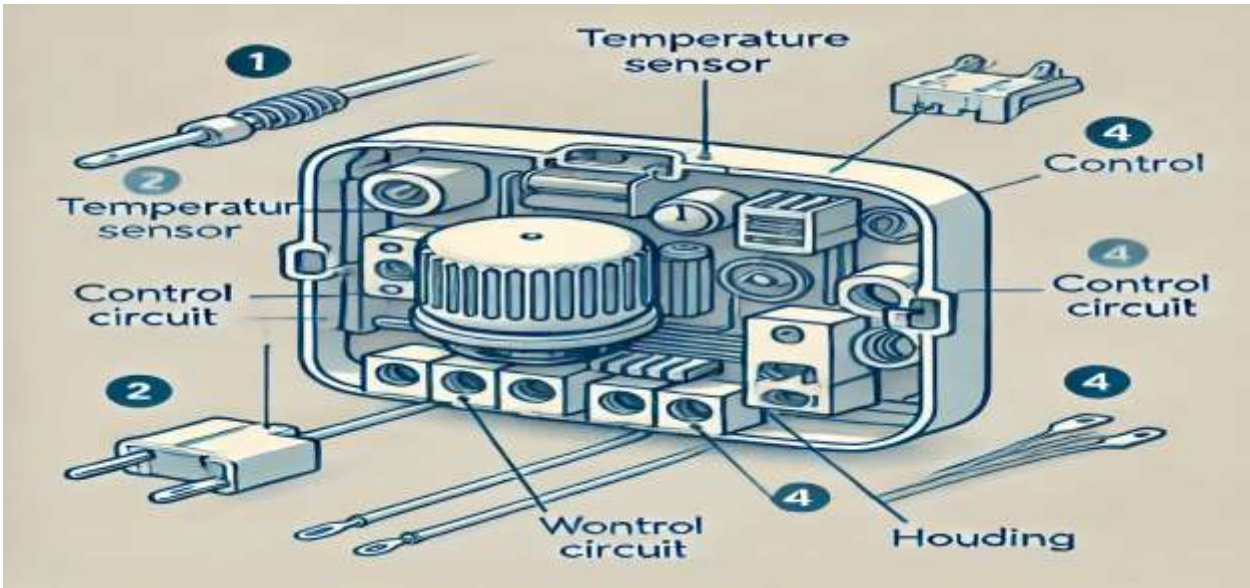
the four sections of the thermostatic features but also borrow the name. therefore, the correct name for the framework is 'employability thermostatic framework'(ETF). The diagram below shows the main sections of a basic electric thermostat.

Presentation of Basic Electric Thermostat



Basically, there are temperatures sensors that monitor real time temperatures. There are targets ranging from low to high within which temperature is expected to flow, while the responsive adjustment circuits work to send information that the temperature is normal, too high or too low and finally the last part is the feedback mechanism circuit that automatically breaks to stop the extra temperature. Anchored on the above concepts of the electric thermostat, the final employability thermostatic framework is indicated fully below. This constitutes all the key variables, emerging themes, systems concept, key institutions and the thermostatic concept. When they are assembled together, they produce a complete framework as shown below. The employability thermostatic framework below is anchored on three (3) integrated pillars.

Pillar Number One (1): Theoretical pillar: This encompassed the main four theories that included the skills development theory, system approach theory, transformative theory and the Human Capital theory.

Pillar Number Two (2): Thermostatic principles: this focused on the scientific principles of an electric thermostat. It operates on the basis of sensing, detecting, regulations, control and feedback. This is a build up from the identified gaps existing in the current literatures

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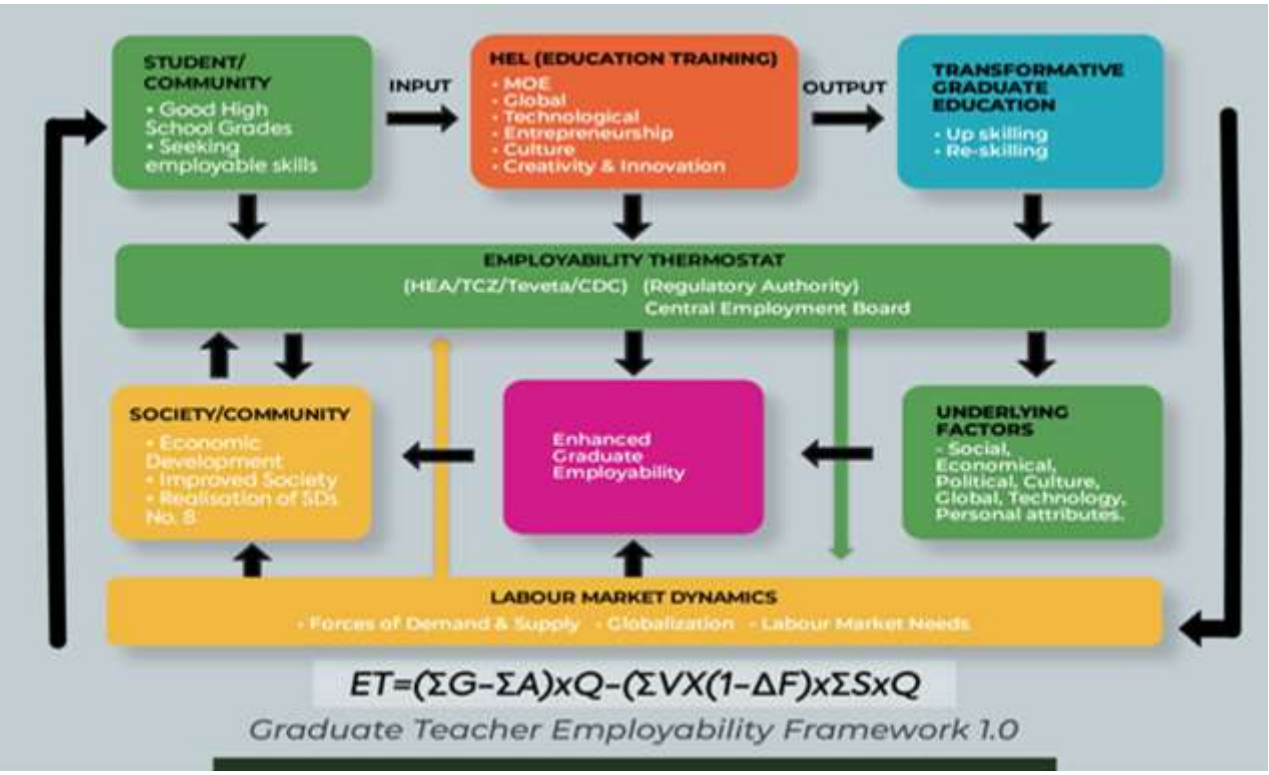
Pillar Number Three (3): Predictability: using the drawn up specific and mathematical formular. We can compute more confidently labour supply and demand on the labour markets of education. This capability helps us to make strategic decisions on labour supply and demand hence enhancing labour control and predictability.



Computation of Labour Supply

From the above framework, we can deduce the equation for labour supply. Labour supply can be estimated as the total number of graduates minus the estimated number of labor losses. Labour supply can be estimated as the total number of graduates produced per annum. This means that we can subtract any losses owing to for example natural death or transborder emigrations. In order to compute for the labour supply, we can use the formular below:

$$S = nGY - nA$$

Therefore, we can deduce that labour supply(S) is given by formular: -

$$\underline{\mathbf{S = nGY - nA}}$$

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In this case *S* stands for labour supply, *G* represents the total number of graduates and *A* stands for the total labour attrition.

Computation of Labour Demand

This can be estimated as the available vacancies adjusted for the rate of change of facility size and the personal skills needs. We assume that vacancies can be influenced by facility expansion or contraction delta F and the skills required nS.

In order to calculate for the labour demand, we can use the formular below: -

D = nV X (1 + delta F) X Ns

Therefore, we can deduce that labour demand(D) is given by the formular: -

D = nV X (1 + delta F) X Ns

From the above formular, *D* stands for demand, *V* represents summation of facility vacancies is the rate of change in the facility size with time and S is the personal skills variety required by the industry.

Employability Equilibrium Thermostat (EETF) Formular

Using the above variables and the mathematical equations obtained in the computations for supply and demand we can now deduce the consolidated formular for employability thermostat where both supply and demand are represented as shown below.

ET=(nG-Na) x Q-(Nv X (1 + delta F) X nS x Q

Since (nQ) is a constant, it simplifies to:

E = nQ left (nGY - nA - nFV times (1 + nrcF) times nS right)

or

Therefore, the Employability Thermostatic Framework (ETF) formular shall be given by

ET=Q (Ng-Na-Nv x (1+ Cv) x nS

This equation represents the "Employability Thermostatic Framework Formular" where all the below conditions may apply accordingly:

- (ET = 0) indicates ***equilibrium*** (labor supply meets labor demand).

- (ET > 0) indicates a ***surplu***s in labor supply.

- (ET < 0) indicates a ***deficit*** in labor supply.

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If the value of the ET is equal to zero, it means equilibrium where supply meets demand. If the ET value is greater than zero, then it means there is labour surplus. When ET is less than zero, then there is deficit in labour supply. In each of the above cases, the correct decision must be made to either increase or reduce labour supply. This gives more control of the labour markets thereby helping to regulate graduate employability more effectively.

The Employability Thermostatic Equation formular provides a quantitative measure to predict and balance the labour markets. It considers not just the raw numbers of graduates and vacancies but also skills alignments, markets growth and facility distributions, offering a holistic view of employability in the labour markets. We can use this formular to predict the labour supply and demand, skills varieties needed by the labour markets, possible labour vacancies, current and future needs. This formular can be used by policy makers, planner, regulatory authorities and the academicians to better manage graduate employability on the labour markets.

DISCUSSIONS

This framework operates using the basic concepts of an electrical thermostat. An electrical thermostat is a device used to regulate temperature in a heating or cooling system of appliance by automatically turning the system on or off based on the temperature settings (Murray et al 2018). This framework also gives indicators when the supply is either low or high. When the demand for labour is either high or low, it gives clear indicators. Essentially, the Employability Thermostatic Framework (ETF) works under the same principle just like that of an electric thermostat. An electric thermostat is a device used to regulate temperature in a system, such as a heating, ventilation, and air conditioning (HVAC) system (Morrison 2014). It automatically maintains a desired temperature by sensing the ambient temperature and controlling the operation of heating or cooling equipment. Basically, an electrical thermostat has four main sections namely sensing temperatures, comparisons, activation, and the feedbacks loop. A thermostat has a sensor that measures the current temperature of a room or system. It continuously monitors whether the temperature deviates from the desired setpoint. The measured temperature is compared to the setpoint (the desired temperature). If the temperature is too high or too low, the thermostat identifies the need for action. Based on the comparison, the thermostat sends a signal to activate or deactivate the heating or cooling system (Meester et al 2020). Once the system adjusts, the temperature to the desired level, the thermostat senses the change and shuts off the system, maintaining balance. Just like an electric thermostat the Employability Thermostat Framework (ETF) requires specific measures and control to be able to deliver the desired outcomes on the labour markets in order to enhance graduate teacher employability. The employability thermostatic framework is the hybrid of three-dimensional structural systems. It is anchored on theory, thermostatic principles and high capabilities for predictability. The framework is complex but highly anchored on integrated processes that are interdependent. This employability thermostatic framework is founded on three identical pillars. Under the theoretical pillar, it is supported by four

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theories namely; system approach, skills development theory, transformative theory and human capital theory. On the other hand of its second pillar, it is supported by the thermostatic properties of sensing, regulations, control and feedback. The third pillar gives the framework the unique competencies to make predictions of labour supply and demand based on the employability thermostatic formular (ETF).

The first pillar comes with four theories. It can be noted that the first theory is called the system approach theory. Under this theory there are processes of inputs processes and output as well as the feedback. In order to get the quality graduates out of every education system, we need quality inputs. We must begin to enroll the correct quality and the correct numbers. One of the fundamental reasons as to why the teaching profession seems to be struggling especially on the basis of employability largely depends on the low-quality enrollments. The teaching profession need to begin to attract prospective learners with high quality high school results. The quality inputs have high possibilities of producing top quality graduates with high impact levels of creativity and innovations. Further, the system approach also pays attention to processes of transforming high school leavers into graduates. This means that there is need for quality education, curriculum, teachers, infrastructures and good systems and procedures that are all tailored to produce quality graduates. The total quality assurance systems must be put in place to regulate the quality of learning so as to focus on the quality of final graduates for the labour markets. The skill development theory on the other hand is anchored on the understanding that adequate and correct skills are given to the learners. Additional skills must be given that makes a graduate powerful as they can undertake multiple tasks. The correct skills are so critical to the realisation of the greater employability capabilities. In practice this means giving teachers extra skills in language, entrepreneurship, culture and lifelong skills that are linked to the real world of work. Both upskilling and reskilling of graduate make them more competitive on the global markets. Under this component, it is further argued that institutions of higher learning and the industry must be networked towards increased interactions for relevant courses, curriculum and contents that address employability problems more proactively. Transformative theory on the other hand focuses on the technological, creativity, innovations and critical thinking in the management of the employability. There is need to build transformative solutions that comprehensively address the problems of gradauate teacher employability. There must be continuous improvements in the manner teacher are being trained now. Modern teachers must be prepared with higher focus on the building their research skills, technological competencies as well as the capabilities to solve modern complex problems. The human capital theory on the other hand is the initiative to invest in human resources with a view to changing and increasing the levels of graduate teachers' employability. This is a unique approach that mainstreams intentional investment in human capital development. It puts a premium on the right skilled people at the right time and place. The introduction of the central bureau of employment office comes with highly qualified human capital that holistically manages both modern and future human crises. This further strengthens the levels

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of regulations, networking and collaborations amongst the key players on the labour markets. It is not enough to have systems. There is need also to put in place mechanisms that ensure that competent people begin to control labour supply and demand through establishments of the intergrated information systems that would be crucial for strategic decision making both in the long- and short-term basis.

The thermostatic pillar on the other hand concentrates on the capabilities of the framework to sense, regulate, control and offer critical feedback in order to safeguard the labour market in education. Sensing simply means that we must check the inputs in the training institutions in terms of quality, quantities and the personality traits. This is very crucial because we can only produce what we want only when we check what we are feeding in the actual system. Quality inputs, may lead to quality outputs. Regulations entails that there must be set limits for minimum and maximum numbers required at the given time. This signifies setting up strong check and balances that guide all the key players to avoid over-enrollments. The benefit that comes with this aspect helps to improve and balance labour supply and demand on the labour markets of education. Strong policy direction could significantly bring sanity to the higher institutions of learning that have been identified to be the main culprits on abrogating this principle. Control mechanisms involve the processes of empowering key institutions such as the bureau of employment office, higher education authority, the teaching council and other regulatory agencies with correct mandate to actualise the higher benefits for graduate teachers' employability on the labour market of education. The control systems are so sensitive in protecting the appliances. However, this is actually missing in the current systems. Some key players may be too complacent or ignorant of their mandates hence they have failed to perform according to the required standards. Feed back relates to the potential to generate complete, accurate, timely and reliable information useful for strategic planning and decision-making processes. The central bureau of employment office can be mandated to offer accurate feedback mechanism, sanctions, warning and punitive measures for maximum compliances. The employability thermostatic framework further gives the predictability in term of the labour supply and demand. using the employability thermostatic formular. We can confidently compute for labour supply and demand. Since we can compute labour supply and demand at the given time, its is also possible to make strategic decisions based on the accurate generated given information. We can control and actively eliminate future complications through strategic decision-making processes. This is an additional innovation to the basis framework as we can do more in term of planning and budgeting.

CONCLUSION

Graduate teacher employability is a complex process. One of the critical problems facing the modern generation is the crisis associated with graduate teacher employability on the labour markets. The sole purpose of this article was to explore, investigate and develop an employability framework that could deliver to the actualization of viable solutions of graduate employability in

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line with the United Nations sustainable development goals (SDG) number eight (8). It was established that graduate teacher employability thermostatic framework offered more scientific techniques based on the principles of an electric thermostat of sensing, regulations, control and feedback. Just like the main functions of a thermostat is to protect the electrical appliance from damage, this device can actively help to protect the labour market of education from technical and professional damages through scientific control of the labour demand and supply. Furthermore, the Employability thermostatic framework innovations comes with an in-built employability equation that measures and computes supply and demand so as to help predict labour supply and demand using the intergrated information. The employability thermostatic framework is also known as a viable tool for strategic decision making, planning and forecasting. The framework highly recommends the following:

- creation of the central bureau of employment office to coordinate and process all the employability information relating to labour supply and demand.
- Implement comprehensive entrepreneurship training to be compulsory to all students in higher learning institutions.
- There is need to provide strong linkages between skill sets and the industrial needs.
- Higher learning institutions must improve the quality of student's enrollments.

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