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Article

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Apprenticeship Reforms in West Africa: An Outcome-Process Evaluation of a Pilot Dual Training Model-Based Apprenticeship Reform Scheme in Ghana

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Abstract

Context: Faced with deep challenges with access to formal education, many West African countries are increasingly taking steps to reform their informal apprenticeship systems to make them a quality skills development alternative for their teeming youth. A review of the literature shows that although different countries in the region are deploying different reform strategies, what is emerging as a dominant reform model is the "dual training model" (DTM), a collaborative arrangement in which the task of training apprentices is shared between informal trainers (master craftspersons, under their respective trade associations) and formal vocational training institutions (FVTIs). This paper presents an outcome-process evaluation of a DTM-based apprenticeship reform programme piloted in Ghana.

Methods: Designed as a case study, the paper adopts an interpretivist approach, relying on diverse sources of data, both secondary and primary. Secondary data includes journal articles, attendance registers of participants, memorandums of understanding, relevant media

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reports, websites, and official reports by all relevant actors. The primary data originated from in-depth interviews with fourteen (14) key informants, as well as from overt and covert observations of respondents.

Results: At the outcome level, the paper shows that the programme has largely failed in transferring new skills or in changing dominant poor practices among trainees, foundational objectives of the programme. At the process level, the paper revealed deep flaws in implementation; these are discussed in detail in an attempt to clarify the programme outcomes.

Conclusion: The paper concludes that although the dual training model remains a potentially viable reform model in informal apprenticeships, its success ultimately depends on the quality of implementation, which in turn depends on the strength and quality of inter-stakeholder collaboration in programme design and implementation.

Keywords: Apprenticeship Reforms, Dual Training Model, Informal Apprenticeship, VET, Vocational Education and Training, Ghana

1 Introduction

Faced with deep challenges with access to formal education, many West African countries have over the last two decades embarked on an aggressive agenda of informal apprenticeship reforms to provide an alternative pathway of skills development for their burgeoning youth population. A review by Walther (2008) of ongoing reform efforts in West Africa (and more recently by Sonnenberg (2014) and the International Labor Organization [ILO, 2012]) shows that although different countries are deploying different reform models, what is emerging as a dominant reform model is the "dual training" model (DTM). The dual training model is a collaborative arrangement in which the task of training apprentices is shared between informal trainers (master craftspersons, under their respective trade associations) and formal vocational training institutions (FVTIs). The DTM is uniquely designed to harness the respective benefits of both the informal and formal training regimes – improving access, reducing cost, and enhancing the quality of training (Walther, 2008). Under the model, master craftspersons provide apprentices with "regular" long-term workplace-based training while the FVTIs provide structured classroom training addressing theoretical and practical aspects of a selected trade area.

Beginning in 2012, Ghana with the support of the German Government through the German Development Cooperation (GIZ), launched the Ghana Skills Development Initiative (GSDI), which was implemented in phases by the Council (now Commission) for Technical Vocational Education and Training (COTVET) and the GIZ. Currently in its fourth (4th) phase, Phases II and III of the GSDI consisted of a pilot programme aimed to 'modernize' the

informal apprenticeship system in five trade areas: Electronics Repairs, Automotive Repairs, Tailoring/Dressmaking, Cosmetology/Hairdressing; and Welding, across three administrative regions of Ghana – the Northern, Greater Accra, and Volta Regions (GSDI, 2019). The goal of the GSDI was to produce a cadre of well-trained "roadside" artisans who would have achieved key competencies in modern standards and practices in their trade areas; and who would be able to pass on these competencies to new trainees, leading eventually to a system-wide reform of the apprenticeship system in selected trade areas (GSDI, 2019). Training of apprentices under the programme was shared between the relevant trade sector associations and FVTIs in three administrative regions.

By deploying the DTM, the GSDI represents a significant innovation in apprenticeship reform efforts in Ghana. Unfortunately, despite its emerging dominance, there have been very few scholarly efforts committed to understanding how the DTM operates in practice; in particular, evaluation of its effectiveness as a reform model. This study attempts to bridge this gap. In doing so, the paper relies on theoretical insights from implementation science and adopts an outcome-process evaluation framework consistent with current trends in evaluation (Jenny et al., 2014; Myers et al., 2018). Outcome evaluations assess the effectiveness of a planned programme in producing desired change (Boothroyd, 2018; Leithwood & Montgomery, 2016; Zhu & Shek, 2020). It seeks to compare projected outcomes against actual outcomes (Leithwood & Montgomery, 2016). Process evaluations examine the quality of programme implementation (Boothroyd, 2018; Linnan & Steckler, 2002; Paciarotti & Valiakhmetova, 2021; Rabiei et al., 2009). Linking outcomes to process implementation helps us understand why a programme failed or succeeded (Linnan & Steckler, 2002).

In evaluating the implementation process, the paper focuses on two foundational concepts in implementation science: Context and fidelity. Context evaluates all the external factors that interact with and/or influence programme implementation and/or uptake of an innovation introduced by a programme; fidelity evaluates how closely the programme implementation follows programme design (as specified on paper). Combining outcome and process evaluation is considered particularly germane to helping us have a more complete view of the GSDI program in a manner that both informs debate and permits more targeted corrective innovations (see Boothroyd, 2018; Carroll et al., 2007; Diaz et al., 2014; Linnan & Steckler, 2002; Mansfield et al., 2015; Paciarotti & Valiakhmetova, 2021). The paper argues that while the DTM is a potentially viable model in informal apprenticeships, its success ultimately depends on the quality of implementation, which in turn depends preponderantly on the strength and quality of inter-stakeholder collaboration in programme design and implementation.

The next session presents a brief literature review on the subject, followed immediately by a more detailed description of the GSDI programme. The following section then discusses the analytical framework of the study, followed by an outline of the methodology. This is then followed by the presentation and discussion of the results of the study, ending with the conclusions.

2 Literature Review

Apprenticeships are inherently situated in the workplace and seek to equip the youth with skills for the world of work in specific trade areas (Gessler, 2019). Apprenticeships vary in terms of formality, and the learning potential of an apprenticeship programme depends on the degree of formality involved (Gessler, 2019). There are three main groups of apprenticeships: Formal, semi-formal, and informal apprenticeships. The distinction between these lies typically in the institutional arrangements surrounding their organization and, to some extent, in the economic domains within which they occur. The formal and informal (apprenticeships) are the best-known classifications, although semi-formal (apprenticeship) is beginning to get some attention (Gessler, 2019; Molz, 2015)¹. Typical of national TVET systems, formal apprenticeships are based on clear policies and regulations that define the contractual relationship between an apprentice and a training provider; specify the standard of training and certification, and provide a clear pathway between apprenticeship and the formal education system. Formal apprenticeships tend to be either company-based or school-based or both (Gessler, 2019).

More predominant in the developing world, informal apprenticeships are so classified not necessarily because they are completely unregulated; but because existing regulations tend to be very sparse and hardly enforced; and because apprenticeships occur almost exclusively in the informal sector (Gessler, 2019; Walther, 2008). They occur typically in micro and small enterprises and involve learning on the job with no classroom-based learning (Gessler, 2019). Informal apprenticeships remain by far the most important skills development option in West Africa, accounting for up to 90% of all trades training in Ghana, Benin, Senegal, and Cameroun (ILO, 2012). Its dominance in West Africa may be explained by the largely informal character of the national economies of West African states as well as the ease of entry, and the relatively lower cost of training associated with informal apprenticeships. With rising poverty and limited formal educational opportunities, and given its flexibility and relative ease of entry, informal apprenticeships tend to become the default alternative in most instances.

Yet, informal apprenticeships remain largely on the fringes of official government regulatory oversight and financial commitment and are typically delinked from national TVET policy architecture (Gessler, 2019; ILO, 2008; Walther, 2008). In most cases of informal apprenticeships, the training curriculum, duration, working conditions, the nature of assessment, and certification are all usually outside of the purview of official state regulatory responsibility, often privately determined by an apprentice and his master (Darvas & Palmer, 2014;

¹ The Semi-formal refers to the type in which industry-sector organizations get involved in providing some degree of formality in terms of standards and certifications, although the geographic coverage and recognition of the standards and certificates remain limited.

Gessler, 2019; Johanson & Adams, 2004).² Against such backgrounds, informal apprenticeships are increasingly noted (and often denounced) for poor quality training (Adams, 2007; Aggarwal & Aggarwal, 2021; Johanson & Adams, 2004; Palmer, 2005). Yet, increasing recognition of the unique potential of informal apprenticeships has inspired a flurry of reform efforts in the developing world, especially the West African sub-region. Informal apprenticeships are increasingly seen to be a cost-effective, even indispensable, option for addressing skills needs and for dealing with the alarming school dropout rates in developing countries (Sonnenberg, 2014; Steedman, 2010). Current reform efforts led notably by the International Labour Organization (ILO), the Group of Twenty (G20), and the Organization for Economic Cooperation and Development (OECD), have naturally focused on improving the quality of training and skills acquired (ILO, 2012; Keese, 2015; OECD, 2014). The DTM is increasingly recognized as a promising option for improving the quality of informal apprenticeships although less is known about its practice and efficacy as a reform model, hence this paper.

2.1 Dualization of Apprenticeships

Aimed at simultaneously tackling skills shortages and youth unemployment (Jäger, 2016; Pilz & Wiemann, 2021; Vogelsang et al., 2021, 2022), the dual approach involves a tightly regulated blend of theoretical and practical training tasks shared between companies and public or public-recognized vocational training schools (Euler, 2013; Jäger, 2016; Pilz & Wiemann, 2021). In this, students spend up to 80% of the training period in companies, and the rest (20%) in recognized vocational schools (Jäger, 2016; Mora et al., 2022). In both the German and Swiss systems, the dual training approach which privileges the companies with substantial control over curriculum design and training management, operates at the upper secondary school level and may last anywhere between 2 and 4 years with tightly scheduled alternations in training venues between the company and school (Euler, 2013; Igarashi & Acosta, 2018; Jäger, 2016). Typically, trainees are simultaneously employees of the company as well as students in the vocational educational institutions (Euler, 2013; Gessler, 2017; Mora et al., 2022).

In this sense, while the dual training approach is a fairly developed model in formal TVET in developed countries, its incorporation into the informal apprenticeship sector in developing regions is a novelty whose practice and effectiveness we must pay a little more attention to. This is particularly important given the growing appeal of the dualization of informal apprenticeships among experts (see Gessler, 2017, p. 8) Using Ghana's GSDI as a case study, the paper attempts to provide some insights about the practice and potential effectiveness of

² The Industry Sector Associations are gradually getting involved in the certification process, but recognition of certificates awarded tends to be extremely limited, often to the immediate geographic zone of the award.

DTM-based models in improving informal apprenticeship outcomes. Was the GSDI effective in improving training outcomes among trainees? We answer this question by comparing programme outcomes to programme objectives. We further provide a detailed examination of the implementation processes with a focus on clarifying the programme outcomes. It is important to stress, here, that while the GSDI might represent a particular form of the DTM, its design as a dual-site (workplace-vocational school-based) programme makes it an ideal case for understanding the practice and potential effectiveness of DTM-based informal apprenticeship reform programs, more generally. In the next section, we provide a brief review of informal apprenticeship reform interventions in Ghana.

2.2 Informal Apprenticeship Reforms in Ghana

Informal apprenticeships remain an important part of the TVET landscape in Ghana in part due to deep historical challenges with access to formal education and in part due to its flexibility and comparatively lower cost of entry. Here, it is important to note that although Ghana has made impressive gains in school enrolment at all levels (Atuahene & Owusu-Ansah, 2013; Ministry of Education [MOE], 2010, 2013), access to formal education remains a major challenge. Recognizing this, the Ghanaian government in a 2004 White Paper identified apprenticeships as the natural solution to developing the skills of its teeming youth. The government promised three main things. The first is to abandon its 'current officially disengaged attitude towards' apprenticeship; the second is to actively 'partner the private sector' in a more systematic way to promote apprenticeship programmes, and the third is to match its financial commitments to secondary school education with commitments to apprenticeship programmes (Government of Ghana, 2004, p. 8). Since then, and slightly before, Ghana has seen a series of apprenticeship reform programmes including its flagship National Apprenticeship programme (NAP), Skills Training and Entrepreneurship Project (STEP), the Rural Enterprise Project I & II (REP I & II) and the Ghana Skills Development Initiative (GSDI), which is under study here.

As has been noted by others, however, these apprenticeship reform initiatives have failed to yield any meaningful change whether in terms of 'formalizing' the informal apprenticeship system or in terms of increasing its efficiency and effectiveness in Ghana (Darvas & Palmer, 2014; Palmer, 2005). The GSDI which is anchored on the growing belief that improving the quality of skills training in the informal sector requires articulation of informal apprenticeships with the formal school system (Molz, 2015; OECD, 2014) is the most recent attempt at improving informal apprenticeship outcomes in Ghana. The GSDI varies from previous reform attempts in its emphasis on the DTM. Below is a more detailed description of the GSDI programme.

2.3 Description of the GSDI Programme Implementation at Ho Polytechnic

The pilot implementation of the GSDI program in the Volta Region was focused on dress-making. The Ho Polytechnic (now Ho Technical University) was selected as the FVTI largely on account of its strength in Fashion Design. Under contract with the GIZ and COTVET, the Polytechnic was required to train selected trainees in line with a 'Competency-Based Training (CBT)' curriculum specially developed by COTVET and approved by GIZ for the programme. The CBT curriculum emphasized practical competence and the success of training was defined predominantly in terms of trainees' ability to accomplish all required tasks covered in each training module. The curriculum also covered training in generic complementary subjects such as basic arithmetic, computer literacy, and communication skills. Overall, the Polytechnic delivered four training sessions: One for MCPs (covering two weeks) and three for apprentices (covering a total of seven weeks) spread over the programme duration of three years.

As depicted in Figure 1 below, the pilot GSDI programme followed what was described as the Collaborative Apprenticeship Training (CAT) framework in which responsibility for training was shared between master craftspersons (MCPs) and formal vocational training institutions (FVTIs). In this model, apprentices received 80% of their workshop-level training from the MCPs while receiving 20% from the FVTI, Ho Polytechnic. Reflecting the collaborative nature of the GSDI programme, recruitment of trainees was exclusively assigned to the Volta Regional chapter of the Ghana Cooperative Fashion Designers Association (GCFDA), based on criteria developed by COTVET and approved by the GIZ. To qualify for selection, a trainee must: (1) Be a citizen of Ghana; (2) be literate and must have completed at least primary education; (3) be genuinely employed either as MCP or an apprentice understudying a master or madam; and (4) be willing to complete the full course and attend all classes. MCPs were selected and trained first; each selected MCP nominated one qualified apprentice from his/her workshop to participate in the programme. Trainees (both MCPs and apprentices) received subsistence and transportation allowance. Overall, the programme covered 15 apprentices and 15 MCPs.

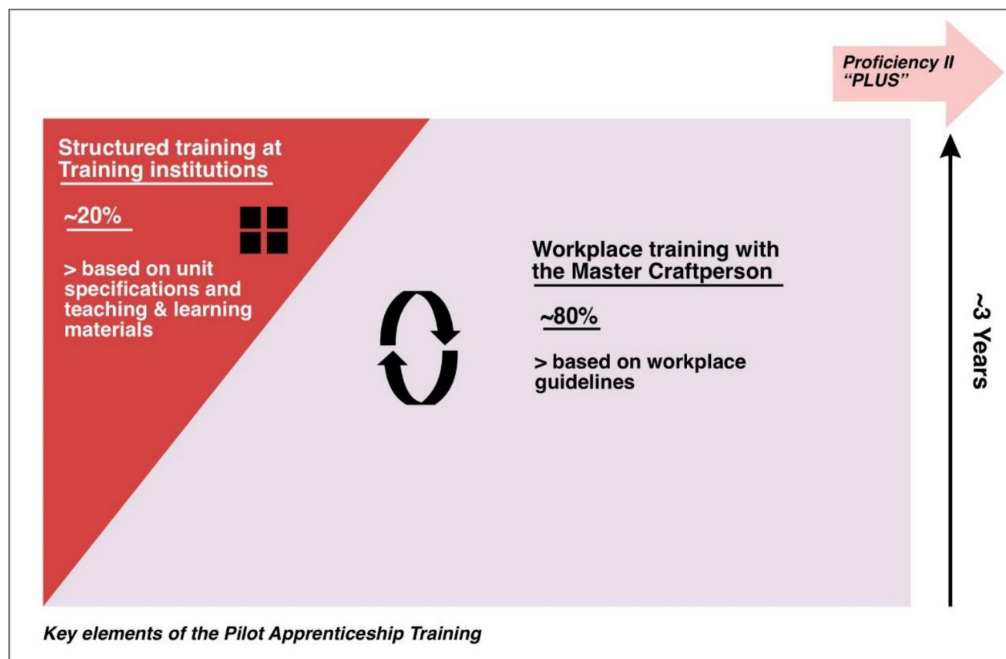


Figure 1: Conceptual Model of the GSDI (MOU, 2014)

The classroom part of the training was delivered by the faculty of the Ho Polytechnic. All trainers selected to deliver the core programme of garment making were faculty of the Polytechnic's Fashion Design and Textiles Department. Trainers on complementary courses such as computer literacy, basic arithmetic, and entrepreneurship came from affiliate departments across the Polytechnic. All trainers, except one, in the garment construction area had a master's degree in the relevant area; each also had substantial years of private practice experience in garment construction. All the trainers (especially those in garment construction) participated in a 4-day pre-implementation training workshop jointly organized by the COTVET and GIZ to prepare trainers for the programme. In the next section, we elaborate on the analytical framework deployed in addressing the main objective of this research.

3 Analytical Framework

The study is informed by theoretical insights from implementation science (IS). IS concerns itself with understanding how novel solutions become routinized in everyday practices (Eccles & Mittman, 2006; Yapa & Bärnighausen, 2018). A central question addressed by IS regards programme effectiveness: Does the programme work (in real life) as intended (Imperial, 2021; Sinclair, 2006; Wolman, 1981)? Programme effectiveness in implementation

science is understood to be a function of both the quality of the intervention itself as well as the quality of implementation of the intervention. Establishing programme effectiveness thus requires an outcome-process evaluation of an implemented programme. Outcome evaluations measure whether and to what extent a programme produces the intended effects on recipients (Boothroyd, 2018; Reihman et al., 1990; Sinclair, 2006; Zhu & Shek, 2020).

Process evaluations provide a detailed examination of the implementation procedures enacted to deliver the programmed objectives (Fixsen et al., 2005; Linnan & Steckler, 2002; Saunders et al., 2014). It looks into the 'black box' of programme implementation 'to see what happened in the varied components of the programme [activities] and how that could affect programme impacts and outcomes' (Saunders et al., 2014, p. 13). By so doing, process evaluations help uncover obstacles to programme effectiveness and ultimately help us draw the line between programmes that are inherently faulty and those that are badly delivered (Carroll et al., 2007; Linnan & Steckler, 2002; Saunders et al., 2014). In analysing the outcome, we assess GSDI's impact in terms of the extent of new skills successfully transferred as well as the extent to which these skills are routinized in the everyday practices of trainees. In analysing the implementation process, we focus on examining the context within which implementation occurred as well as the fidelity of implementation (see Table 1 below).

Table 1: Description of the Process Elements (adapted from Carroll et al., 2007; Pfadenhauer et al., 2017)

Dimension	Component	Key Questions
Fidelity	Dosage	Were all the contents delivered?
	- Programme Content	Were contents delivered to recipients as often and for as long as intended?
	- Programme Duration	
	- Delivery Frequency	Were all the programme protocols delivered using the appropriate techniques and tools?
	- Programme Reach	Did enough people receive the training to produce the anticipated outcome?
	Participant Reaction: Participant's views about programme relevance and delivery quality	What were the perceptions of trainers and trainees (participants) about the programme and the way it was delivered? Did the programme meet their expectations?
Context	Macro context (structural influences)	What were some of the national, regional, or global developments that may have influenced, and how did these influence programme implementation outcomes?
	Meso context (organizational influences)	What factors in the implementing organizations enabled or constrained programme implementation outcomes?
	Micro context (Individual actor influences)	What specific actors' actions or behaviours enabled or constrained implementation outcomes?

As summarized in Table 1 above, context refers to the structural, economic, social, cultural, organizational, and political environment within which a programme is implemented. As

argued by others, analysis of implementation must take into account context as both an enabling and an inhibiting factor in the achievement of programme outcomes (Fixsen et al., 2005; Peters et al., 2013; Pfadenhauer et al., 2017; Sinclair, 2006). The focus must thus be to analyse which and how specific elements of context interact to constrain or enable programme impacts (transfer and uptake of new skills) (Pfadenhauer et al., 2017). Pfadenhauer et al. (2017) argue that analysis of context must take into account macro, meso, and micro-level contextual developments surrounding programme implementation. Macro-level factors include national, regional, or even international events or situations that influence implementation in some form or shape; the meso-level context refers to factors within the implementing organizations: The structure, size, organizational culture, and overall work climate (Pfadenhauer et al., 2017). The micro-level context refers to attitudes as well as direct actions or inactions of actors within the implementing or participating organization that may influence programme impacts (Pfadenhauer et al., 2017).

Fidelity examines the extent to which the programme was delivered as planned (Linnan & Steckler, 2002; Peters et al., 2013; Saunders et al., 2014). In analysing the fidelity of implementation, we focus on two main sub-constructs: *Dosage* and *participant reaction* (Carroll et al., 2007; Pfadenhauer et al., 2017). Dosage examines the extent to which the programme was delivered as designed, focusing on the duration, reach, and frequency of programme implementation. Participant reaction evaluates the participants' (and/or implementers') views or judgment about the programme. Often, the uptake of a new programme depends on acceptance by those receiving it (Carroll et al., 2007). The goal here is to take a detailed look at the context and fidelity vis-à-vis GSDI implementation outcomes.

4 Methodology

Designed as a case study, the research paper adopts an interpretivist approach, relying on diverse sources of data, both secondary and primary. Secondary data include journal articles, relevant project documents including the attendance register of participants, memorandum of understanding (MOU) signed between the programme organizers and implementers; relevant media reports, websites, and official reports by all major actors relevant to the subject. The secondary data was useful in clarifying the structure and details of the programme, and the contextual situation surrounding programme implementation, as well as in defining the theoretical basis of the research. Regarding primary data, the paper relied on observational and interview data. These are described in detail below.

Observations: We deployed observation at two main levels to be able to answer questions about the fidelity of implementation and also about outcomes of the training. First, to have a first-hand account of program implementation, we undertook an overt observation of the actual classroom delivery of the contents of the programme. The observation lasted twelve

workdays, carefully spread between two (out of 4) training sessions of the programme – one for MCPs and the other for apprentices. The observation focused on the delivery of different modules in the programme with particular attention to modules in the core area of garment making, given the programme objectives. This observation proved useful, especially in helping us more fully understand implementation fidelity.

To gather evidence of skills transfer and/or uptake, a second set of observations was deployed at the workshop approximately 6 months after the last training session. The observation lasted 15 days over three months and was focused on examining participants' uptake and/or use of critical skills delivered under specific modules during the training sessions. The observation was administered using a checklist of key demonstrable competencies expected to have been delivered in the core areas of garment construction under the training programme. It further focused on understanding actors' compliance with a common list of 'do's and don'ts' in key areas of their operation. Overall, a total of five (of the 15 participating) workshops (covering a total of 5 MCPs and 4 apprentices) were observed. To improve the validity of the results, each shop was observed three different times within the three-month window with the same checklist; the results were then synthesized to show a clear picture of the programme outcome related to skills uptake.

Interviews: The observation was further complemented with in-depth interviews with a total of 14 respondents (5 MCPs, 5 apprentices, 3 trainers, and 1 COTVET/GIZ-appointed coordinator) (see Table 2 below for a detailed breakdown).

Table 2: Summary of Interview Data Collection (own compilation)

Type of interviewees	Number of respondents	Interview Code
Apprentices	5	IntAppren 1
MCPs	5	IntMCP 2
Trainers	3	IntTrain 3
Coordinator	1	IntCoord 4
Total		14

Interviews with the trainees were conducted in the respondents' workshops and local language (Ewe); the interview transcripts were translated into English and were later read (and interpreted back into Ewe) to each respondent for validation. Interviews with the programme facilitators and coordinator were undertaken in English. Overall, all the interviews lasted between 35 minutes and 90 minutes.

5 Results and Discussion

This section presents and discusses the key results emanating from the study. It starts with a detailed discussion of the programme outcomes especially as relates to the programme's success (or otherwise) in transferring the intended new skills or in changing perceived poor practices dominant in the sector. It then presents and discusses the results regarding key the implementation process, focusing on the issues of context and fidelity of implementation. We start with an examination of the programme outcomes.

5.1 Outcome Evaluation of the GSDI: What has Changed?

As highlighted earlier, a key objective of the GSDI is to modernize the apprenticeship system through the provision of modern skills in selected trade areas. In the fashion programme, the focus was to provide new skills in the core area of garment-making as well as in the auxiliary areas of enterprise management. Given that goal, it is necessary to evaluate the extent to which new skills were successfully transferred and to further examine the extent to which the new skills are routinized in everyday practices at the shop level. Did the GSDI succeed in transferring new skills to trainees? The answer is a little complicated. In the main, most trainees especially the MCPs and 'senior apprentices' believed the skills taught under the programme were neither new nor transformative. Most trainees considered the skills provided to be too rudimentary to be of any material effect in their trade: *'The things we learned were very elementary - how to take body measurements, how to take care of our tools, to organize the shops, etc.'* (IntAppren 1). Indeed, some (4 of 10) trainees argued that they already possessed some of the skills sought to be transferred through the GSDI programme: *'We already knew most of the things they taught us'* (IntMCP 2). But does this mean the programme was a complete waste? The answer, based on the data, is no! Overall, some (6 of 10) participants confirmed they learned some important things even if they considered those to be non-critical skills for their trade. As pointed out by a respondent:

I did not feel I wasted my time at all. I learned a lot of things including the correct naming of our tools. For example, in our shop we used to call this material 'stiff'; here we were told the correct name is vilene. When I went back to the shop, I taught my seniors and juniors the correct name for that material. We also learned about how to draft patterns using brown paper and some new types of shirt collars that we did not learn about in the shop (IntAppren 1).

This was corroborated by another thus:

The training was generally very helpful (...). We learned about the correct naming of tools and materials in the trade; we learned about how to cut materials; we learned about different types of fabrics, how to turn the fabrics when we cut them, what styles are most appropriate for each type of fabric (...). It was in the course of the programme that I got introduced to what they call tracing

wheels. I learned that you don't always have to go straight to do the direct method using chalk and scissors; sometimes, it is more useful to adapt the design and trace it out before you cut it out. That was very valuable to me (IntMCP 2).

In essence, while the trainees admitted to having learned some skills, overall, they considered those skills to be neither novel nor transformative to their work. On the whole, such perceptions cannot be dismissed, given that the Proficiency I curriculum followed by the GSDI provided only entry-level skills – and in this particular case - to people who could hardly be described as entry-level learners. The GSDI programme was thus considered as hardly meeting the 'real' skills needs of the roadside garment producers. As admitted by one of the facilitators, the GSDI programme *'barely scratched the surface of the problems'* of roadside dressmakers (IntTrain 3).

A second important issue related to outcome evaluation, in this context, concerns the extent of the routinization of new skills learned under the programme. Thus, given that trainees generally admitted to having learned some new things or skills from the programme, it is important to examine the extent to which these skills are routinized in everyday practices at the shop level. In other words, did the programme trigger any workshop-level changes in the practices of trainees? The answer to this question, based on the data, is a resounding no! In fact, in terms of practice, it is difficult to notice any discernible change in practice among trainees, as they continued to exhibit all the old, bad practices. Most have continued to call their trade tools the same old, 'wrong' names; to sew only the old collars they knew before the training; to sew without first cutting patterns; to sew zippers the same old, wrong way; and to not use tracing wheels. In other words, most trainees have remained stuck to their 'old ways'.

Multiple reasons have been advanced by respondents for this situation. For some (4 of 10) trainees, it is simply the lack of mastery of some of the relatively new skills introduced to them. One respondent put it this way:

I don't use all of the things I learned from the training. The pattern drafting in particular I don't use it because I did not get a good understanding of how to do it. You know, with free-hand cutting, you know all your parts and where each one goes; but the pattern drafting involves calculations that are difficult for us to master. You have to draft the pattern, cut it out, and then place it on the fabric you want to cut; in fact, I just can't understand how to do it. So, I just do the free-hand cutting (IntMCP 2).

For others (2 of 10) who may have at least mastered some of the skills, the nature of the local roadside fashion market appears to play some inhibiting role. First, because some of the skills taught are perceived to be very specific to particular types of design styles unless a customer places an order that requires the use of the skills taught, there is no effort to do so. This is how one respondent put it:

We do not use all the things we learned. Of course, a lot depends on the orders we receive. Not all the things we learned are useful in all cases; so, which of the skills we use depends on the type of orders received. For example, when I receive an order that requires the making of a princess dart, I always make sure that I cut the pattern first, as we were taught. And so is the case with armholes; but with normal darts, I don't cut patterns; I just sew them directly (IntMCP 2).

Second, there is a certain obduracy of widely accepted bad "standards" engrained in the local roadside fashion market that appears to interfere with the ability of trainees to use some of the new skills. A respondent explains it this way:

Some of the things too are simply not applicable in our case as 'roadsiders'. For example, we were taught that the standardized maximum allowance to leave in the seam is 1cm; but our customers don't like that. Sometimes, you sew for the person; she comes to collect it and asks you to open it more. If you don't give more than the 1cm allowance that we were taught to leave, you will be in trouble (IntMCP 2).

This would suggest that some of the skills learned contradict the demands of the local roadside fashion market. Again, for some, lack of the appropriate equipment is a major cause for why they do not practise what they learned in the programme:

The main problem for most of us is that we do not have [in our shops] most of the tools and some of the equipment that was used to train us. This means that no matter what we were taught in the programme, we are always forced back to our outmoded ways of doing things once we returned to our shops (...). We just remain at square one (IntMCP 2).

Again, the challenge may have arisen in part because of the inability or unwillingness of participants to abandon old practices in favour of the new:

From our original training, we were taught to take the measurement and proceed straight to the cutting, so we don't draft patterns often. (...) Having mastered free-hand cutting, I can free-hand cut quite a lot of things without any trouble. Pattern drafting is a bit time-wasting, especially when dealing with 'express orders' - [i.e. orders that need to be completed instantly at a premium charge] (IntMCP 2).

In short, the GSDI failed to improve training outcomes. It neither provided trainees with the 'new skills' envisaged nor did it change actual shop-level practices among them. But why did the programme fail? To understand this, we now turn to scrutinizing the implementation process. While we aim to provide as much information that should help us understand the GSDI implementation in general, our goal here is to focus on aspects of the implementation that help explain the GSDI's failures.

5.2 Process Evaluation of GSDI: What Went Wrong, Where?

As pointed out earlier, process evaluations provide a detailed examination of the implementation procedures enacted to deliver the programmed objectives. In evaluating the implementation process, we focus on examining two key issues here: *Context* and *fidelity of implementation*. We begin by looking at context.

5.2.1 Context

Context evaluates how elements in the environment inhibit or enable outcomes. We analyse context at the three levels – macro, meso, and micro – around the implementation of the GSDI programme. Analysis of the macro-context looks at the bigger national picture in the spheres of culture, economics, politics, and even geography. Meso-context focuses on the organizational characteristics and events in the implementation agencies; micro-context looks at the individual behavior or attitudes of actors in the implementation process. These are addressed as follows:

Macro-context: Ghana has, over the last 30 years, enjoyed consistent economic growth resulting in halving the country's overall poverty. Yet, it is questionable that this growth has benefitted all sections of the Ghanaian population (Ghana Statistical Service, 2018). The actual number of extremely poor people increased by more than 200, 000 (from 2.2 million in 2013 to 2.4 million in 2017; Ghana Statistical Service, 2018). Unemployment remains a huge challenge both for the educated and uneducated youth in Ghana (Baah-Boateng, 2015) and Ghana's economy remains substantially informal with more than 80% of the total labor force located in the informal sector (Akuoko et al., 2021; Osei-Boateng & Ampratwum, 2011).

A large portion of Ghanaians live in a 'survival mode', barely able to eke out a living. This reality traps the local market (including the fashion market) in a vicious cycle of poor quality, as low wages drive demands preponderantly towards cheap, low-cost products and eliminate incentives for producers to invest in quality-enhancing skills and equipment that may increase production costs without realistic options to recoup investments in profits. The influence of this situation on trainees' unwillingness and/or inability to use the new skills learned from the training was evident throughout the discussion on why trainees were not using their skills. We note, for example, how some trainees were unwilling to adopt pattern drafting as it is deemed to 'waste time' without offering anything in return in terms of profits at the roadside.

The overall poverty situation also affects the garment market in other ways. Where the skills offered to trainees are perceived to contradict the demands of the local market, it is highly unlikely that such skills shall be accepted and/or used. In Ghana, owing in part to poverty (and to some extent culture), people hang on to their clothes for as long as necessary. To accommodate any future changes in bodily structure and/or size, it has become a necessary

rule to leave as much seam as possible in the garments. This situation readily conflicts with the current standard that limits seam allowances to 1cm. It is probably worth repeating a quote cited earlier:

Some of the things too are simply not applicable in our case as 'roadsiders'. For example, we were taught that the standardized maximum allowance to leave in the seam is 1cm; but our customers don't like that. Sometimes, you sew for the person; she comes to collect it and asks you to open it more. If you don't give more than the 1cm allowance that we were taught to leave, you will be in trouble (IntMCP 2).

Put in context, the macro environment, characterized by informality and poverty appears to have exerted a significant impact on the uptake of the GSDI skills that *may have* been successfully transferred.

Meso-context: At the organizational level, we noted how the public character of the implementing institution – the Polytechnic – interfered with programme implementation in terms of logistical flows, as programme funds released through the Polytechnic became quickly entangled in the 'normal' administrative strictures of the institution, ultimately undermining timeliness of releases to support the acquisition of programme logistics. Insistence on due process (for example regarding the procurement process) complicated logistical flows in more ways than one. A facilitator put it this way:

When we needed to take the money from the Polytechnic to buy the training materials, the school put P.O.P [locks] on the money (...) when we asked for the money [to buy training supplies] they came up with all these issues about the procurement law. Even my insistence that this was a different programme did not change anything (IntTrain 3).

This caused significant logistical supply disruptions that threatened programme delivery, even triggering suspicion of programme funder, GIZ, against facilitators. A respondent explained the situation in concrete terms below:

I remember that we were doing the training when the people [GIZ officials] came around; they were not very happy at all [that we complained about not having supplies] because they said they had given money for all the materials and wondered why we were complaining that we did not have training materials. How do we explain such a thing? Somewhere along the line we may be betraying the Polytechnic [if we say we couldn't get the money]; meanwhile, they [the Polytechnic] were those causing the confusion (IntTrain 3).

This lack of flexibility, itself the result of the public character of the implementing organization is deemed to have negatively affected implementation through the delayed supply of logistics.

Micro-context: At the micro (actor) level, we also observed strong resistance to change among trainees, especially the MCPs, to the new content being taught under the programme.

Many of the senior apprentices and MCP trainees who had acquired certain bad habits and practices deemed "normal" within the traditional system, were very resistant to change. Interview data shows that quite a number of them did not accept that some of their "normal practices" were inappropriate and must be replaced with the new practices being taught. As such, a number of the MCPs focused more on defending their old, bad practices rather than learning or accepting new skills. Indeed, most of the senior apprentices and MCPs appeared to take every argument advanced by trainers for a new practice as an indirect attack on their professional competence. This put them in a 'resistance mood' for a significant part of their study, severely enervating the training. A facilitator explained it this way:

Most of the MCPs [for the most part] were like 'We are our own managers; why is it that you are now coming to tell us that what we are doing is not good?' (...) so, when you are teaching, sometimes, they will sit almost with their backs to you with an attitude that suggests that 'we already know this; why are you wasting our time? It took us some time to convince some of them to accept what we were teaching them (IntMCP2).

Some of the micro-level challenges also resulted directly from failures in the recruitment process. The first failure in the recruitment process was that there were no clearly defined criteria on the level of experience required for entry into the programme. This lapse allowed the selection of trainees with marked differences in experiences. For example, while some of the apprentice trainees were at the end of their apprenticeship terms – closer to graduating – others were just a few weeks into their apprenticeship terms. The result is a seemingly incongruous blend of trainees who must be taught the same material at the same time and speed. This undoubtedly undermined teaching and learning. A facilitator tried to explain the impact of this shortfall this way:

(...) But here is the case they [all apprentices regardless of educational background and experience] were all put together: Some are very fast and some are very slow, but they were all put together. Some, you will have to go back and teach them simple things like how to thread the machine, how to use it, etc. This makes the whole thing not really smooth as expected (IntTrain 3).

The second flaw in the recruitment process concerned the failure to abide by all eligibility criteria set out for the programme. For example, although willingness to complete the programme was a basic requirement, this was not always adhered to. There is some evidence to suggest that some of the apprentice trainees participated in the programme literally against their will, or at least without any meaningful understanding of the programme that would trigger their commitment to it. One of the facilitators put it this way:

(...)Most of the apprentices came completely unprepared for the programme; it was like 'Hey, pick your things, they are going to teach you in the Polytechnic; go to the Fashion Department' and they came. (...)You could tell that a few of them did not want to come. It's just like 'madam says we should come, so we have come' (IntTrain 3).

What this means is that a number of the trainees entered the programme without the needed psychological adjustment towards the programme. This is believed to have undermined commitment to the programme particularly among the apprentices' group, leading to some of them dropping out of the programme.

5.2.2 Fidelity of Implementation

Evaluation of fidelity addresses dosage, which focuses on examining the extent to which programme implementation aligns with programme design in the key elements of duration, frequency, and reach. It further addresses participants' reactions to the programme. We analyse the fidelity of implementation in detail below.

Dosage

Programme content: The GSDI programme content focused on delivering skills at the Proficiency I level of Ghana's *National Vocational TVET Qualification Framework*. As explained by COTVET (2020), Proficiency I provides a bridge into the formal TVET system in Ghana to those with no formal education. It focuses on delivering the basic skills, and knowledge within a selected vocational area while preparing trainees for entry into the formal education system. Consistent with the Proficiency I requirements, the GSDI programme delivered training on seven CBT units as follows: *Introduction to the Workplace; Health and Safety; Tools and Equipment; Introduction to Fabrics and Notions; Sewing Techniques; Body Measurement and basic garment making; and Generics – mathematics, science, ICT, English, and Entrepreneurship*. Each training unit comprised both theoretical and practical aspects.

For example, 'introduction to the workplace' focused on teaching trainees how to set up their workshops, the type and recommended height of seats to use, and generally how to keep a safe working space in the shop. The unit on 'health and safety' introduced trainees to appropriate safety practices in the garment-making field. Under 'tools and equipment', trainees learned the correct naming of several garment-making tools and equipment. 'Introduction to fabrics and notions' exposed trainees to different types of fabrics, differences in textures and their implications for styling, etc. In 'Sewing techniques', trainees were trained on a range of topics including pattern drafting, pattern adaptation, final pattern marking and labelling, laying out, cutting out, marking out, and assembling of cut out pieces to a garment. In 'body measurement', trainees learned about the appropriate methods of body measurement for different types of garments. In line with the requirements for Proficiency I certification, trainees

were also expected to obtain passes in five (5) theoretical subjects: English, Arithmetic, Information Communication Technology (ICT), and Entrepreneurship. Overall, all contents were delivered and despite some challenges with logistical flows, trainees had reasonably good access to training materials, with each provided with a basic set of a toolkit, (starter packs) which they were allowed to keep after the training and fabrics needed in making all the specimen and the self-garments.

Duration: An important shortfall of the programme concerns the short duration of programme delivery. Although Proficiency I requires a minimum of 11 weeks to achieve, GSDI's training of MCPs lasted only 2 weeks while that of apprentices lasted a total of 7 weeks (spread in three instalments over 3 years). This arose because of funding challenges as GIZ provided no guarantees for covering the entire expected duration of the programme. On the contrary, GIZ made the extension of each training session explicitly conditional on the *availability* of funds (MOU, 2014), leaving training session extensions largely open-ended and unpredictable. Regardless of the cause, the short duration of the programme had intrusive impacts on programme implementation as facilitators must make deep compromises and cut corners to ensure they can check all the boxes in content delivery, with attendant implications for programme objectives. A facilitator explained the impact of the short duration on the capacity of trainees to acquire the necessary competencies:

The time was not enough. I say that because if we really wanted to train people to acquire skills that are applicable at the international level, then we need more than two weeks (...). By the time they [trainees] appeared to be getting what we were teaching them, it was also time for them to go (IntTrain 3).

Predictably, many (7 out of 10) of the trainees were unable to master key skills sought to be transferred under the GSDI programme. An MCP trainee put it this way:

The duration was too short. The things they tried to teach us were not very easy; they were tough. But because of the limitation of time, the facilitators had to rush the programme; they did not have the luxury of time to teach and explain the things in a manner that would make them understandable, especially those of us who did not have substantial prior formal education. (...) So, in a way, we really could not understand things the way we were expected to (InterMCP 2).

Frequency: The short duration was further complicated by challenges in the attendance records of trainees, resulting partly from training session scheduling complications. In the main, the scheduling of training sessions appeared to have been treated as an emergency, lacking any foreplanning and meaningful consultations with the Polytechnic MCPs/trainees. As was pointed out by a facilitator,

(...) At times, they (COTVET/GIZ) won't even ask you [when might be a convenient time]; they would just fix the date and say for example, from the 16th to the 30th of so and so month we want our people [trainees] to come. Whatever we have going on here, they have no idea or even care (...). You will be there and then they [just] come (IntTrain 3).

In essence, some training sessions coincided with 'season' – the festive seasons which tend to be the busiest period of the year for the trades association members. The result as evident from the attendance records is that several trainees missed a significant number of training days. In fact, about one-fifth of MCP trainees (in particular) missed between three to four days of the (two-week, 10-day) training session. The lack of funding commitment for the full duration of the training from the outset is also found to have introduced uncertainties in the scheduling of training sessions, generally. Overall, it is evident that dosage suffered seriously from the short duration, complications in training sessions scheduling, and to some extent reach of the programme. We address reach below.

Reach: As pointed out earlier, the programme covered only 15 apprentices (out of an estimated 4,000 eligible apprentices) and 15 MCPs (out of an estimated 2,000 eligible MCPs). When viewed in light of the total population of the target group, the reach of the GSDI could hardly be considered to be enough to quickly produce the structural changes envisaged. However, considering that this was a pilot programme, this lapse is understandable.

Participant Reaction: Participant reaction evaluates participants' reactions to the intervention. It examines "judgments by participants or recipients about the outcomes and relevance of an intervention" (Carroll et al., 2007, p. 3). It is evident that although most trainees were satisfied with the performance of the training facilitators, environment, and facilities, most (understandably) had doubts about the relevance of the training curriculum. On the latter, there appeared to be a huge mismatch between the skills desired or anticipated by trainees and those delivered by the programme. Many (5 of 10) trainees expected career-focused, high-level skills learning rather than the so-called rudimentary formal education-focused content offered by the GSDI. A respondent explained it thus,

We need good training so that we can also do the things people in the Fashion Department at the Polytechnic do. What we did was introductory - We did learn about pattern drafting, dart manipulating, etc., but even in terms of pattern drafting we learned about only one pattern (...). We learned only one style (...) we needed to learn more, like wedding gowns, political suit, lapel collar making, etc. (IntMCP 2).

Another trainee had this to say in corroboration:

What we wanted to learn is how to cut new, trendy slit designs and the like; we needed those skills more. So, when we started the programme, most of us felt we already knew those things that we were being taught and did not see why we had to start from there. Of course, as things progressed, it became clear that we were doing some things wrong. But in the main, what we needed is how to

cut new slit designs and trendy designs. During the programme, I observed that one of the women [facilitators] wore a particular slit design; it looked a bit complicated but very nice. Most of us had no idea how to cut those types of designs; so, we were hoping to learn some of those things, including how to cut wedding gowns. Unfortunately, we did not touch on those things at all (IntMCP 2).

The same feeling was expressed by another respondent in terms of her willingness to pay for the GSDI training in the future. Asked whether she would be willing to pay, she responded thus:

I don't think so. Before I can pay, I have to be sure that the programme will focus on how to help us cut some of the trendy designs in vogue, like the designs that are often displayed on fashion-style calendars sold in the local market. Given the scope of what we learned in this programme, I don't think it would be appropriate to ask us to pay for that type of training. The exact thing we want to learn, we did not learn. Of course, the basic stuff is okay; we learned them and I can say we know some of them; but because we are at the roadside, we are more interested in how to cut different types of styles and how to finish the clothes we sew – we are more interested in higher-level practical skills rather than theories (IntMCP 2).

The upshot is that it appears many of the trainees especially the MCPs were fairly withdrawn from the programme as they considered the content as not matching their interests. Under such psychological conditions, it is not surprising that many of them considered the skills that may have been transferred as irrelevant.

6 Conclusion

This paper presented an outcome-process evaluation of a DTM-based pilot apprenticeship reform programme in Ghana. At the outcome level, the paper shows that the programme failed in addressing substantive skills deficiencies or in changing dominant bad practices among trainees. This result is not particularly surprising, given as others have pointed out, that examples of long-term successful transfer of dual training approaches generally are hard to come by (Gonon, 2014; Pilz & Wiemann, 2021; Valiente & Scandurra, 2017). Yet, the GSDI implementation reveals some critical shortcomings that must engage attention in future DTM-based schemes in informal apprenticeship reform efforts.

First, the paper shows that the GSDI lacked proper inter-agency collaboration both in programme design and implementation. The dual approach is an inherently multi-actor venture in which the definition of programme goals and critical implementation strategies must be collaboratively worked out, to build synergy among stakeholders and ultimately facilitate effective implementation. This was lacking in the GSDI. Both the formal vocational training institution and the trade sector association appeared to have had very little voice in either programme design or implementation. This was evident not simply in terms of the mis-

match in training content and training needs, but also in terms of the gap between programme duration and programme funding. GSDI offered what trainees did not want; COTVET designed a programme for a duration that GIZ was unwilling or had no resources to fully support. Again, training scheduling did not always take into account the views of the formal training institution or those of the trainees. Under such scenarios, it is not particularly surprising that the GSDI failed. The paper shows, for example, how the perceived mismatch in training needs and training content fuelled resentment among trainees thereby undermining the learning process. It also shows how the lack of collaboration permitted training scheduling conflicts that promoted trainee absenteeism and frustrated both facilitators and trainees.

Very importantly, the paper also highlights the key issue of context in programme implementation. At the macro-contextual level, it shows how the structure of the local market demands may interfere with trainee acceptance and uptake of skills transferred. This is particularly instructive for future DTM-based programmes in informal apprenticeships. There must be a careful evaluation of the larger context in prioritizing competency standards that may be sought to be transferred. In other words, while it is important to train people for the "international market", there must be a careful balance between "international market" demands and those of the local market in prioritizing competency standards that must be transferred. At the same time, meso-level contextual factors such as the political-cultural-legal dynamics in formal training institutions and micro-contextual issues such as trainee attitudes are shown to have exerted significant pressures on implementation. Future DTM-based schemes in informal apprenticeships must not take these for granted. Any such intervention must anticipate and scan for these contextual forces and fully incorporate them in programme design and implementation.

At a conceptual level, the GSDI programme demonstrates that while the DTM is a potentially useful reform model, it is no magic wand in and of itself. Its success ultimately depends on the quality of programme design and implementation, which in turn depends intricately on the strength and quality of inter-stakeholder collaborations. Going forward, it may be important to ensure participants' views are carefully and fully considered in programme design and implementation, especially as concerns training curriculum and training session schedules. This may be important in building support and cooperation in programme implementation in a manner that improves outcomes. Training, especially for MCPs needs to be more targeted and practice-focused rather than theory-focused. In this sense, a review and retargeting of the GSDI curriculum is recommended.

Ethics Statement

We have taken all necessary steps to implement the ethical principles of the IJRNET via informed consent. Each participant was fully briefed on the research purpose and allowed to decide whether or not to participate. We have also taken further steps to protect the anonymity of each of our respondents not only during the data collection process but also in the main report.

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References

- Adams, A. V. (2007). *The world bank children and youth unit human development network the role of youth skills development in the transition to work: A Global Review*. The World Bank.
- Aggarwal, A., & Aggarwal, G. (2021). New directions for apprenticeships. *Education in the Asia-Pacific Region*, 58, 211–226. http://doi.org/10.1007/978-981-16-0983-1_15
- Akuoko, P. B., Aggrey, V., & Amoako-Arhen, A. (2021). Ghana's informal economic sector in the face of a pandemic. *Social Sciences & Humanities Open*, 3(1), 100094. <https://doi.org/10.1016/J.SSAHO.2020.100094>
- Atuahene, F., & Owusu-Ansah, A. (2013). A descriptive assessment of higher education access, participation, equity, and disparity in Ghana. <https://doi.org/10.1177/2158244013497725>
- Baah-Boateng, W. (2015). Unemployment in Ghana: A cross sectional analysis from demand and supply perspectives. *African Journal of Economic and Management Studies*, 6(4), 402–415. <http://doi.org/10.1108/AJEMS-11-2014-0089>
- Boothroyd, R. A. (2018, 23 February). *Process and outcome evaluation approaches*. <https://www.usf.edu/cbcs/mhlp/tac/documents/florida-main/cjmhsa-tac-presentations/boothroyd-process-outcome-evaluation.pdf>
- Carroll, C., Patterson, M., Wood, S., Booth, A., Rick, J., & Balain, S. (2007). A conceptual framework for implementation fidelity. *Implementation Science*, 2(1), 1–9. <http://doi.org/10.1186/1748-5908-2-40>
- Commission for Technical Vocational Education and Training. (COTVET) (2020). *Qualification framework*. 2020. <https://cotvet.gov.gh/qualification-framework/>
- Darvas, P., & Palmer, R. (2014). Demand and supply of skills in Ghana: *How can training programs improve employment and productivity?* The World Bank. <https://doi.org/10.1596/978-1-4648-0280-5>

- Diaz, T., Guenther, T., Oliphant, N. P., Muñiz, M., Barbera, Y., Amouzou, A., Pagnoni, F., Pratt, A., Morris, S., Counihan, H., Collins, D., Jarrah, Z., Kadobera, D., Rutebemberwa, E., Siribie, M., Sirima, S. B., Chinbuah, M. A., Gyapong, J. O., Basinga, P., Yeboah-Antwi, K. (2014). A proposed model to conduct process and outcome evaluations and implementation research of child health programs in Africa using integrated community case management as an example. *Journal of Global Health*, 4(2). <https://pubmed.ncbi.nlm.nih.gov/25520799/>
- Eccles, M. P., & Mittman, B. S. (2006). Welcome to implementation science. *Implementation Science*, 1(1), 1–3. <http://doi.org/10.1186/1748-5908-1-1>
- Euler, P. D. (2013). *Germany's dual vocational training system: A model for other countries?* Bertelsmann Stiftung. https://www.bertelsmann-stiftung.de/fileadmin/files/BSt/Bibliothek/Doi_Publikationen/GP_Germanys_dual_vocational_training_system.pdf
- Fixsen, D., Naoom, S., Blase, K., Friedman, R., & Wallace, F. (2005). *Implementation research: A synthesis of the literature*. NIRN.
- Gessler, M. (2017). Educational transfer as transformation: A case study about the emergence and implementation of dual apprenticeship structures in a German automotive transplant in the United States. *Vocations and Learning*, 10(1), 71–99. <https://link.springer.com/article/10.1007/s12186-016-9161-8>
- Gessler, M. (2019). Concepts of apprenticeship: Strengths, weaknesses, and pitfalls. In S. McGrath, M. Mulder, J. Papier & R. Stuart (Eds.), *Handbook of vocational education and training* (pp. 677–709). http://doi.org/10.1007/978-3-319-94532-3_94
- Ghana Statistical Service. (2018). *Ghana living standard survey (GLSS 7) 2017*. <https://www2.statsghana.gov.gh/nada/index.php/catalog/97>
- Gonon, P. (2014). Development cooperation in the field of vocational education and training – the dual system as a global role mode? In P. Maurer & M. Gonon (Ed.), *The challenges of policy transfer in vocational skills development – National qualifications frameworks and the dual model of vocational training in international cooperation* (pp. 241–260). Peter Lang.
- Government of Ghana. (2004). *White paper on the report of the education reform review committee*. Government of Ghana.
- Ghana skills development initiative. (GSDI) (2019). *Ghana skills development initiative (GSDI III)*. GSDI. https://www.gfa-group.de/projects/Ghana_Skills_Development_Initiative_GSDI_III_3884439.html
- Igarashi, T., & Acosta, P. (2018). Who benefits from dual training systems? Evidence from the Philippines. *Policy Research Working Papers*. <https://doi.org/10.1596/1813-9450-8429>
- International Labour Organization. (ILO) (2008). *Upgrading apprenticeship systems in the informal economy*. ILO. https://www.ilo.org/skills/projects/WCMS_158771/lang--en/index.htm
- International Labour Organization. (ILO) (2012). *Upgrading informal apprenticeship - A resource guide for Africa*. https://www.ilo.org/skills/pubs/WCMS_171393/lang--en/index.htm
- Imperial, M. T. (2021). Implementation structures: The use of top-down and bottom-up approaches to policy implementation. *Oxford Research Encyclopedia of Politics*. <https://doi.org/10.1093/ACREFORE/9780190228637.013.1750>
- Jäger, M. (2016). *Dual vocational education and training as an option in development cooperation: Survey of experts on behalf of the Donor Committee for Dual Vocational Education and Training. Final Report*. https://www.dcdualvet.org/wp-content/uploads/DC-dVET-Dual-VET-as-an-Option-in-Development-Cooperation_Survey-Matthias-Jaeger.pdf

- Jenny, G. J., Brauchli, R., Inauen, A., Siré, D. É., Fu"llemannfu"llemann, E., Fridrich, A., & Bauer, G. F. (2014). Process and outcome evaluation of an organizational-level stress management intervention in Switzerland. *Health Promotion International*, 30(3), 573–585. <https://doi.org/10.1093/heapro/dat091>
- Johanson, R. K., & Adams, A. V. (2004). *Skills development in Sub-Saharan Africa*. World Bank. <https://doi.org/10.1596/0-8213-5680-1>
- Keese, M. (2015, 16 September). *Promoting quality apprenticeships: Definition and key challenges – Skills and work*. OECD. <https://oecdskillsandwork.wordpress.com/2015/09/16/promoting-quality-apprenticeships-definition-and-key-challenges/>
- Leithwood, K. A., & Montgomery, D. J. (2016). Evaluating program implementation. *Http://Dx.Doi.Org/10.1177/0193841X8000400202*, 4(2), 193–214. <https://doi.org/10.1177/0193841X8000400202>
- Linnan, L., & Steckler, A. (2002). Process evaluation for public health interventions and research: An overview. In A. Steckler & L. Linnan (Eds.), *Process evaluation for public health interventions and research* (pp. 1–23). Jossey-Bass.
- Mansfield, L., Anokye, N., Fox-Rushby, J., & Kay, T. (2015). The health and sport engagement (HASE) intervention and evaluation project: Protocol for the design, outcome, process and economic evaluation of a complex community sport intervention to increase levels of physical activity. *BMJ Open*, 5(10), e009276. <https://doi.org/10.1136/BMJOPEN-2015-009276>
- Ministry of Education. (MOE) (2010). Education sector performance report - 2010. Ministry of Education, Republic of Ghana. <https://new-ndpc-static1.s3.amazonaws.com/pubication/2010+Education+Sector+Performance+Report.pdf>
- Ministry of Education. (MOE) (2013). Education sector performance report, 2013. Ministry of Education, Republic of Ghana. <https://new-ndpc-static1.s3.amazonaws.com/pubication/2013+Education+Sector+Performance+Report.PDF>
- Molz, A. (2015). *Delivering TVET through quality apprenticeships*. UNESCO-UNEVOC. <https://unevoc.unesco.org/e-forum/BackgroundNote-VC-Apprenticeship-Molz.pdf>
- Mora, T., Escardíbul, J. O., & Pineda-Herrero, P. (2022). The effect of dual vocational education and training on grades and graduation in Catalonia, Spain. *Educational Review*. <https://doi.org/10.1080/00131911.2022.2076656>
- Memorandum of Understanding. (MOU) (2014). Memorandum of understanding signed between Ho Polytechnic, COTVET and GIZ. Ho Polytechnic.
- Myers, G., Wright, S., Blane, S., Pratt, I. S., & Pettigrew, S. (2018). A process and outcome evaluation of an in-class vegetable promotion program. *Appetite*, 125, 182–189. <https://doi.org/10.1016/J.APPET.2018.01.023>
- Organization of Economic Cooperation and Development. (OECD) (2014). *Quality apprenticeships for giving youth a better start in the labour market*. OECD. <https://www.oecd.org/employment/quality-apprenticeships-youth-conference.htm>
- Osei-Boateng, C., & Ampratwum, E. (2011). *The informal sector in Ghana*. Friedrich Ebert Foundation. <https://library.fes.de/pdf-files/bueros/ghana/10496.pdf>
- Paciarotti, C., & Valiakhmetova, I. (2021). Evaluating disaster operations management: an outcome-process integrated approach. *Production and Operations Management*, 30(2), 543–562. <https://doi.org/10.1111/POMS.13280>
- Palmer, R. (2005). *Beyond the basics: Post-basic education, training and poverty reduction in Ghana*. Post-Basic Education and Training Working Paper Series-No4. Department of international De-

- velopment. https://assets.publishing.service.gov.uk/media/57a08c5be5274a31e0001172/Palmer_Ghana_PBET_WP4.pdf
- Peters, D. H., Adam, T., Alonge, O., & Agyepong, I. A. (2013). Implementation research: What it is and how to do it. *British Journal of Sports Medicine*, 48(8), 731–736. <https://doi.org/10.1136/bmj.f6753>
- Pfadenhauer, L. M., Gerhardus, A., Mozygemba, K., Lysdahl, K. B., Booth, A., Hofmann, B., Wahlster, P., Polus, S., Burns, J., Brereton, L., & Rehfuess, E. (2017). Making sense of complexity in context and implementation: The context and implementation of complex interventions (CICI) framework. *Implementation Science*, 12(1), 1–17. <https://doi.org/10.1186/s13012-017-0552-5>
- Pilz, M., & Wiemann, K. (2021). Does dual training make the world go round? Training models in German companies in China, India and Mexico. *Vocations and Learning*, 14(1), 95–114. <https://link.springer.com/article/10.1007/s12186-020-09255-z>
- Rabiei, K., Kelishadi, R., Sarrafzadegan, N., Abedi, H. A., Alavi, M., Heidari, K., Bahonar, A., Boshtam, M., Zare, K., & Sadeghi, S. (2009). Process evaluation of a community-based program for prevention and control of non-communicable disease in a developing country: The Isfahan healthy heart program, Iran. *BMC Public Health*, 9. <https://doi.org/10.1186/1471-2458-9-57>
- Reihman, J., Varhus, S., & Whipple, W. R. (1990). Evaluating honors programs: an outcomes approach. *NCHC Monographs Series*, 32. <https://core.ac.uk/download/pdf/189476333.pdf>
- Saunders, R. P., Wilcox, S., Baruth, M., & Dowda, M. (2014). Process evaluation methods, implementation fidelity results and relationship to physical activity and healthy eating in the Faith, Activity, and Nutrition (FAN) study. *Evaluation and Program Planning*, 43, 93–102. <https://doi.org/10.1016/j.evalprogplan.2013.11.003>
- Sinclair, T. A. P. (2006). Implementation theory and practice: Uncovering policy and administration linkages in the 1990s. *International Journal of Public Administration*, 24(1), 77–94. <https://doi.org/10.1081/PAD-100000089>
- Sonnenberg, K. (2014). Traditional apprenticeship in Ghana and Senegal: Skills development for youth for the informal sector. *Journal of International Cooperation in Education*, 15(2), 93–105. <https://doi.org/10.15027/34856>
- Steedman, H. (2010). *The state of apprenticeship in 2010: International comparisons a report for the apprenticeship ambassadors network*. <https://cep.lse.ac.uk/pubs/download/special/cep22.pdf>
- Valiente, O., & Scandurra, R. (2017). Challenges to the implementation of dual apprenticeships in OECD Countries: A literature review. *Technical and Vocational Education and Training*, 24, 41–57. http://doi.org/10.1007/978-3-319-47856-2_3
- Vogelsang, B., Röhrer, N., Pilz, M., & Fuchs, M. (2022). Actors and factors in the international transfer of dual training approaches: The coordination of vocational education and training in Mexico from a German perspective. *International Journal of Training and Development*, 26(4), 646–663. <https://doi.org/10.1111/IJTD.12279>
- Vogelsang, B., Röhrer, N., Fuchs, M., & Pilz, M. (2021). Cooperation between learning venues and its limits: The hotel industry in Cancún (Mexico). *International Journal for Research in Vocational Education and Training*, 8(4), 67–89. <https://doi.org/10.13152/IJRVET.8.4.4>
- Walther, R. (2008). *Towards a renewal of apprenticeship in West Africa: Enhancing the professional integration of young people*. Agence Française de Développement Département de la Recherche. https://www.eib.org/attachments/general/events/luxembourg_18112008_apprentissage_en.pdf
- Wolman, H. (1981). The determinants of program success and failure. *Journal of Public Policy*, 1(4), 433–464. <https://doi.org/10.1017/S0143814X00002336>

- Yapa, H. M., & Bärnighausen, T. (2018). Implementation science in resource-poor countries and communities. *Implementation Science* 13(1), 1–13. <https://doi.org/10.1186/S13012-018-0847-1>
- Zhu, X., & Shek, D. T. L. (2020). Subjective outcome evaluation of a positive youth development program in Mainland China. *Research on Social Work Practice*, 31(3). <https://doi.org/10.1177/1049731520980802>

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