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## The Balance of Theoretical and Practical Skills in Agricultural Technical Schools in Haiti: An Exploration of the Curriculum

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### Abstract

Haiti, with its alarming hunger index, and serious concerns for the population's food security status, suggests that its agricultural production and productivity are insufficient to guarantee availability of food for the people. Increased productivity supposes the dissemination of best agricultural practices among farmers, and enough qualified extension agents carrying the scientific findings into the rural communities. However, studies in Haiti, have found that the extension activities are mostly conducted by graduates from TVET schools. Meanwhile, little is known about the quality of the training provided in these institutions. This study explored the balance of practice and theory in Haitian TVET curricula. Individual interviews to directors and teachers and focus groups with students explained the role of practical experiences in TVET curriculum by emphasizing on the importance, the purposes and the amount of such practical experiences in the program of study. The various instructional methods used to ensure sufficient practices were also revealed, specifically, participative methods, research and various field activities. Nevertheless, many barriers impede more practices, which were (a) scheduling, (b) lack of resources, (c) students' attitudes, (d) absence of laboratories in Haiti, and (e) the rural reality and environmental issues.

### Keywords

Haiti; experiential learning; technical schools; agriculture

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**The Balance of Theoretical and Practical Skills in Agricultural Technical Schools in Haiti:  
An Exploration of the Curriculum**

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**Abstract**

*Haiti, with its alarming hunger index, and serious concerns for the population's food security status, suggests that its agricultural production and productivity are insufficient to guarantee availability of food for the people. Increased productivity supposes the dissemination of best agricultural practices among farmers, and enough qualified extension agents carrying the scientific findings into the rural communities. However, studies in Haiti, have found that the extension activities are mostly conducted by graduates from TVET schools. Meanwhile, little is known about the quality of the training provided in these institutions. This study explored the balance of practice and theory in Haitian TVET curricula. Individual interviews to directors and teachers and focus groups with students explained the role of practical experiences in TVET curriculum by emphasizing on the importance, the purposes and the amount of such practical experiences in the program of study. The various instructional methods used to ensure sufficient practices were also revealed, specifically, participative methods, research and various field activities. Nevertheless, many barriers impede more practices, which were (a) scheduling, (b) lack of resources, (c) students' attitudes, (d) absence of laboratories in Haiti, and (e) the rural reality and environmental issues.*

*Keywords:* Haiti; experiential learning; technical schools; agriculture

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### **Introduction**

Agricultural activities are important because farming produces the food necessary to human consumption and survival (Moehler, 1997). However, still today, in many parts of the world food insecurity exists (FAO, IFAD, & WFP, 2015) both on the national and at the household level (FAO, 2003). In the developing countries, as opposed to industrialized ones, agriculture is part of normal activities because a high percentage of the population is involved in production (Wilkin, 1997). This situation may explain why developing countries produce less food per acre of land per worker (Fuglie & Wang, 2012) and why 70% to 75% of the poor of the world live in rural areas (FAO, 2002). Haiti is a country that faces all of these obstacles, with an alarming hunger index severity (von Grebmer et al., 2016), with 25% of the population living in extreme poverty (WFP, 2018), and 39% of the total population living in rural communities according to FAOSTAT (2018). Since GFRAS (2017) found that graduates from the technical schools for the most part work in extension in Haiti, it would be important to understand the curriculum of Haitian agricultural Technical, Vocational, Education and Training (TVET) as it relates to the state of agricultural production in the country. The Ministry of Education has reported that TVET has been declining in the country and quality of private TVET is not guaranteed (MENFP, 2012). It becomes crucial to investigate the curriculum at Haitian agricultural TVET schools.

### **Literature Review**

Mouzakitis (2010) defined TVET as a type of education which trains people to work in a particular occupation through suitable and relevant curriculum or enables lifelong learning for employed people in that occupation. From this definition, it can be

inferred that the provision of skills which address market demands ought to be included in a TVET program, so as to encourage employment (Mouzakitis, 2010). In a developing country like Ghana, TVET has been found to provide employable skills to the youth (Darvas & Palmer, 2014). In Latin America and the Caribbean (LAC) region, TVET has incurred curricular modifications to add entrepreneurial and organizational skills to the technical (King, 1993), because there may not be enough demands, so employment must be created (UNESCO, 2015). However, TVET must provide quality skillset that is linked to the economy and meets employer's needs according to UNESCO (2015). This organization has also raised concerns about the link between academic education and components of curricula with TVET (UNESCO, 2015). In general, TVET's curricula should aim to integrate elements of participative methodologies and hands-on experiences (Minghat & Yasin, 2010). The different types of teachers which are involved in TVET, as well as their contribution in the specific characteristics of the institutions where they work, is important to consider when attempting to understand TVET as an educational system (Heikkinen, 1997). Quality of TVET must be improved, through the standardization of the curriculum and the development of non-technical skills, innovative training and educational methods, professional development for teachers as well as restoration of TVET's public image (Basu & Majumdar, 2009; Nooruddin, 2017). In reality, TVET is very diverse to respond to a variety of curricula needs based on clientele, institutions, employment opportunities and outcomes (King, 1993).

### **Theoretical Framework**

This study was framed using Experiential Learning theory (Kolb, 2014)

with a focus on more practical experiences situated in realistic settings to provide context-specific learning and include an enculturation process (Brown, Collins, & Duguid, 1989; Miller & Gildea, 1987). Some example practical experiences include internships, field projects, hands-on laboratory experiments, practicums, educational placements, in-class experiential activities, service learning (Beard & Wilson, 2013; Cantor, 1997; Kolb, 2014; Roberts, 2006).

### **Purpose**

This study sought to gain insights into the types of skills Haitian agricultural technicians are receiving at the schools, more specifically what was the balance of theoretical and practical skills within the Haitian agricultural TVET's curriculum.

### **Methodology**

This study used a basic qualitative study approach (Ary, Cheser Jacobs, Sorensen, & Walker, 2012), with semi-structured interviews and focus groups. The study sampling consisted of all the cases within the targeted population of TVET schools in the Ouest department of Haiti (Harding, 2013), resulting in four schools, one in Montrouis, which was affiliated with a university, and three in Petit-Goave. Within each school, the sampling method used was stratified purposeful sampling (Ary et al., 2012) with typical cases chosen (Miles, Huberman, & Saldaña, 2014). In each school, the director and three teachers were interviewed, and a focus group of nine students was conducted. However, in Montrouis (university affiliated) deviant cases were selected and one student was interviewed (Ary et al., 2012). The interview guides were prepared in English, and then translated into French and Haitian Creole; the interviews were conducted in Creole. The interviews and focus groups occurred at

participants' convenience, at their home, office or campus; they were audio-recorded and the researcher kept a journal (Yin, 2016). The results analyzed directly from the audio were not transcribed (Green, Franquiz, & Dixon, 1997), rather researcher took notes in English (Ary et al., 2012; Miles et al., 2014). Initials codes emerged using the constant comparative method; axial coding was then used to organize initial codes into themes and sub themes (Saldaña, 2016). Two peers fluent in English and Creole each reviewed randomly one teacher note for trustworthiness (Creswell & Miller, 2000). Quotes were pulled directly from audio and translated to English. The synthesized versions of directors' individual interviews were returned to them for member-checking (Cho & Trent, 2006; Hoffart, 1991); three of four gave feedback. To further ensure rigor, the researcher used triangulation of data sources from students, teachers and directors as well as method triangulation with interviews, field notes and observations (Carter, Bryant-Lukosius, DiCenso, Blythe, & Neville, 2014).

Most of the directors and teachers were agronomists; but some were technicians as well. They were all male. Many were businesspersons or had other teaching positions and only worked part-time at the schools. Three of them had master's degrees and worked fulltime. All of the students were from rural communities and nine were women out of 28 students. They all reported family activity to be agriculture-related and commerce. Although not asked, the age range seemed relatively wide and many had worked and had studied in other fields before. The institutions were technical schools with the agriculture option, except 03 offered other technical options and 04 was a university offering bachelor's degrees. The program lasted 2 to 3 years, but 04 had a credit system. The minimal entry level was 3e (school 01 and 02); school 03

required seconde and 04 philo. Only 02 had INFP recognition and 04 was an accredited university.

### **Findings**

Data yielded three themes related to the balance of theory and practice in the curriculum of agricultural TVET schools in Haiti. The first was the role of practical experiences in the curriculum. The second was instructional strategies used in TVET to provide practical experiences. The final theme focused on barriers to providing more practical experiences.

### **The Role of Practical Experiences in the Curriculum**

All of the respondents thought that practices are at the core of technical studies, as attested by 02-T1: “practice should be 75 to 90%,” because “practice is the base” (03-T3) for technical studies. Moreover, practical experiences serve many purposes in the program of studies, because they are an inherent expectation from technicians as well as a competitive advantage for them, “the practice tells who you are directly” as students from FG-01 revealed. Practical experiences also help in preparing them for their future work in extension and they are the way to ensure best environmental practices are implemented. Each participant also evaluated their level of satisfaction with current ratio of practice and theory, which may be summed up by 01-T1’s comment, “People want to stay in theory; they don’t want to go to practice.” Three sub-themes emerged from the data: (a) the importance of practical experiences, (b) the purposes of practical experiences, and (c) the amount of practical experience in the curriculum.

**Importance of practical experiences.** Teachers, students and directors gave similar responses about the importance of practical experiences in the

technical curriculum that is that, “for me the essential is practice” in an agricultural technic program of study (04-T1). That is because “agricultural sciences are very practical [in nature]” so “we should give them practice for up to 60-70% and the theory could be 30-40% at least” (01-T3), backed up by 01-T2 who says it should be “70% practice and 30% theory.” D-03 says, “with the experiences we have going in the field with them, we see that it has many good beneficial roles, it has a lot of advantages” because, according to 03-T3, “an ounce of practice is worth more than a ton of theory” for them to understand. That situation is explained by the fact that “practice has an extremely important role” because “when you go practice, it means that you go find out that what you’ve seen in writing, what it is exactly” (FG-03). Therefore, practical experiences enhance learning, as 04-T2 explained, “when you do it with your hands, you learn more than 50%” of the course content. Some teachers also gave it the place it deserves in the course’s learning assessments, 01-T2 “the practice is graded as well and sometimes the practice’s grade weighs more than the theories.” Nevertheless, at the end of the day, the point is to prepare the students for the job market and increase their employability. Therefore, according to 01-T3 “you can spend a lot of time doing theory and you can even manage to finish the cycle of studies you’re in but when you get to the field, it’s like you’re someone who never really studied the science for real.” As 03-T1 pointed out “if I say I’m an agricultural technician I must be well-versed in the practice, which means that in the field we must have minimum 60 to 70% of practice.” The students will have to perform in the field, so they must learn the practical skills to be successful in their future jobs as technicians, “for me, an agricultural technician should be more practical than

theoretical; in the training he's receiving, for me, it's supposed to be 60% practice and 40% theory" says teacher 04-T3. Teachers also understood that it is their responsibility to provide such needed skills to them while they are studying or as 03-T2 said "I could still give them all the theory, but if it doesn't get to the field, for them to not only explore but do themselves, the work has not been completed." Teacher 03-T2 was the only who raised an important point which elevates the importance of practical experiences even more in the technical route. He exposed that the way technicians were taught in the past was positive, in that when the agronomist who teaches the course goes in the field he should have an agricultural technician accompany him. "I have 1 or 2 technicians with me in the field;" "they are the monitors" who explain things to students in the field rather than him, the teacher who already explained the theory in class. In short, everyone agreed, "for me practice is one of the greatest pillars for agricultural technic [...] because practice is the most important in agricultural technic" (FG-02), because, as D-01 recognized "agriculture is an experimental science, it's the field and it's the practice." Nonetheless, FG/E-04 told "but as a technician, they make you do more practice." This statement, which he reiterated throughout the interview, was however, contradicted by what the dean and all three teachers revealed about the school's program not making a difference between students from either route, bachelor or technical.

#### **Purposes of practical experiences.**

Practical experiences have multiple purposes. For one, it seems to be a consensus "practice makes a technician a technician, if you don't practice you may go teach or something else" as students from FG-01 explained, or in FG-02 "with more practice you'll become a good agricultural

technician because an agricultural technician doesn't exist on paper." It is what the technical studies are about, "when you talk about agricultural technic you see more practice than theory" (FG-02). This idea was supported by a few teachers as well, such as 03-T1 "being a technician means being more versed in the practice than theory," or 03-T3 "when you see agricultural technicians in our culture, you mostly see the field." That is because as mentioned during FG-03, "practice is important because without practice you will go nowhere, because as a technician practices are your thing."

Practices are essential to technicians for various other reasons, like the ones related to the types of work in which they ought to be involved. FG-01 said "and also you cannot produce if you don't practice." D-04 explained that the practical experiences help students produce real commodities such as chicken, tilapia, legumes, pigs, fruits etc. "but this develops entrepreneurship spirit in them as well." Practical experiences are important in enabling graduates to be productive members within the agricultural system through effective entrepreneurship. They should also be involved in the extension system, helping the farmers produce better. Therefore, according to 03-T2, the technician's role is important because of "practice and the fact that they're in the field, close to the farmers." 03-T1 thought "the technic focus means the field; the technician has to, for the most part, work in the field, practice and provide his knowledge in a technical manner in the field." Directors and students shared the same vision for technicians in the extension system as well, as attested by D-04 "you need to be facing reality and in contact with the field." In focus group FG-03, a student revealed that "we must do the practices, so we may be able to execute them for beneficial results not only for ourselves but

for the benefice of the whole [agricultural] community.” A student in FG-01 exposed that, “I can’t come with a bunch of French [words]” to the farmers as this is not helpful to them at all. The extension activities of technicians can also help enforce better practices with the farmers. As explained by D-01 “we go in the field” to make experimental comparisons between parcels, for example with different types of fertilizers, and prove that the synthetic ones are not necessarily the best ones to use.

Practical experiences in the curriculum are also necessary because “it helps with learning,” 04-T2 revealed, “if you only listen and you never use what you’re listening to, you won’t remember.” As 04-T1 explained “it is in practice that you learn” because he stated, students from previous cohorts who have not had the practicum he taught, consider that they have not learned anything. Teacher 01-T1 explained how class content is chosen so that on the “short term give them [the students] a fast-paced and operational training.” The reason that the training must be “straightforward with fast techniques that can be implemented in the field” (01-T1), is because “an agricultural technician is someone who is very practical” (FG-03). However, there is a need to integrate better practical experiences in the curriculum. Teacher 01-T1 said “we can’t stay stuck with students on the traditional; we go further with them to show them there are ways in which things can be improved.” This situation is also linked to their future roles within the system, as mentioned earlier; because, “there’s a method called *hand in the dough*, you are not a technician if you can’t apply this method.” As technicians, they must learn how to realize the activities themselves, because “as a technician you should never engage in an activity that has no guarantee, you will fail;

you must have the guarantee that you will succeed.”

Finally, technicians are competitive on the job market because of their technical skills and are sometimes hired instead of agronomists. 01-T2 gave an example of his former student who was one in a group of three agronomists recruited in the organization to do the same job and with the “same respect.” 02-T2 also said, “The technician is all about practice, that’s what they believe in;” he went on to add, “In whatever project that exists in whatever institution, they want technicians more than they do agronomists, because the technician is more practical.” So, inherent to the technician and his program of study there must be practical experience, because it is ultimately a competitive advantage, even compared to agronomists. Students were aware of that situation as well, like in FG-03, someone supported that “the technician does more practice than the agronomist; the technician is more practical than the agronomist.” They also said that “if you take more theory now, and you don’t practice, it’s like you feel you’re not a technician anymore.” Another student in FG-03 reported what an agronomist told him “sometimes technicians compete with agronomists and win because of practice.” After all, “when you’re in the field that’s when you feel you are directly in the profession for real” (FG-03).

**Amount of practical experience.** In the focus groups, the amount of practice deemed necessary ranges between 60 to 80% across groups and inside each individual group as well. However, most focus groups were reluctant to give a number on what the actual balance between practice and theory looked like, but in FG-02, a student ventured to say that reality might be around 50% of each in her opinion. However, another student quickly disagreed

with her, and says that for him, it is “at least 70% of practice.” It can also be inferred that FG/E-04 felt the practice he got was insufficient, because he practices on his own volition with a few institutions to complement his training. The teachers, for the most part, did not think they are able to include the sufficient amount of practice in their courses. 01-T1 bluntly stated that, in agricultural education at all levels, “currently there’s almost no practice the way things are done right now;” students sometimes spend their whole study cycle and never go on the field.” However, he agreed that “at the technical level this happens a little bit but not as it should.” This moderate view is the most shared among teachers. 04-T3 claimed that “for the courses I teach, it’s not 60/40, but I could say 70% theory and 30% practice;” 02-T1 managed to do less than his ideal 75-90%, having only “50 to 70% practice” in his courses. For teacher 01-T3 “with a lot of sacrifices it [balance between practice and theory] may be 50/50.” 04-T2 thought that sometimes learning is insufficient without the practice because students are amazed at how much easier it is than expected when they do practice, which is why he feels that “practice should be superior to theory.” However, some still feel that they have managed to give the students what is needed. According to 01-T3, “you should do more practice than theory but mostly in Haiti, you do more theory than practice” but “with our weak means we offer the students an adequate training.” 03-T1 claimed that “by evaluations that we have conducted, we estimate that the students have cumulated enough practical knowledge to become agricultural technicians.” On the other hand, the directors, in general, were more optimistic than the teachers were. As D-03 admitted, practice must be “75-80% [...] but up to now we are at 60-75%; or D-01 “I’ll say [it is] 50/50 but practice should be

60%.” Nevertheless, D-04 revealed, “I am personally very satisfied with the results” of the reversed pyramid experiment that has been going on for 7-8 years because “I find students to be more practical.” D-02 even claimed that “here they [students] do more practice than theory” because “the technical schools are 80% practice and 20% theory, but we do 50% theory and 80% practice, which means we increase it.”

### **Instructional Methods**

Many teachers revealed different instructional methods they use to ensure that there is a balance in the curriculum, starting with various (a) participative methods, (b) research assignments, and (c) field activities.

**Participative methods.** There are a few ways in which teachers include participative methods in their teaching. For instance, teacher 04-T2, who taught a practicum, said his classes do not have lectures in them, “they’re very interactive, [he] takes each person’s opinions.” Then the students got to compare methods in the demonstration parcels and he derives the conclusion through the results. 03-T1 claimed to “use participative methods; my students must participate in the class, speak and tell what they know [...]; I am a guide.” He also taught by questioning the students rather than lecturing because he is not the only one who possesses knowledge. Others avoided the classic exams, for example, in 02-T2’s course, “the final may be an assignment or a workshop,” 01-T2 who gave “objective and subjective” exams, and 03-T3, who said some exams are “interviews and case studies,” with role-play and simulations “I play the role of the peasant.” 03-T1 innovated in the grading, by making the students grade each other after an assignment, and he served as a jury during this process. 04-T2 said “we give students the freedom to self-evaluate in what they’ve

learned.” Teacher 04-T3 made groups of students present whole chapters of the course content. He explained, “I dispense 50% lectures and the students basically do the other 50%, or I do 40% and the students do 60%.” “It’s almost like debate sessions” where the students also do oral presentations and “it allows students to learn better.”

**Research.** Conducting their own research was said to help students learn better. According to 03-T1 “we accentuate on assignments, particularly research assignments, practice assignments” because students remember more from research assignments than with lectures in classroom, students “find more personally with research” than lectures. Many teachers however (04-T3; 02-T3; 03-T1; 01-T2; 01-T3), mentioned giving research assignments to students. For example, 01-T2 said “we also teach them to do research,” 04-T3 said “I push the students towards research,” and 01-T3 said “we send them to do research as well.” 03-T3 added “for homework, I mostly make them do research.” Research was therefore, viewed as a positive tool for learning. However, in only one of the focus groups (FG-01) research was mentioned “sometimes he [the teacher] just throws the subject out there and sends us to do research, and I appreciate that.” The students in general refrained from speaking about methods when prompted.

**Field activities.** Most teachers (04-T2; 04-T3; 02-T1; 02-T2; 03-T1; 03-T2; 03-T3; 01-T1; 01-T2; 01-T3) and a few students mentioned field trips and visits as a way to integrate practical applications to course content. According to 04-T3, “for the courses I teach, [...] it’s field visits,” and in FG-02 they expressed that “they [teachers] mostly go out with us in the field.” What happens in these trips vary among teachers and according to the type of course.

Sometimes it really is just about visiting what exists and allow students to see with their own eyes. Like 01-T3, who said “for example we go out with them, we visit farms with them.” This idea was supported by students in FG-01 “sometimes after two weeks of theory, on the third week, he [the teacher] programs and tells us let’s practice; so, we go visit a farm [...]; each trip is always different.” Sometimes it is more the description of an ideal than reality, like 01-T1 expressed, “we must do a lot of visits, look at each production sector [...] and propose recommendations to help the sector advance.” Other times the teacher precisely mentioned taking the students to do active observations in the field because of the type of course or because of the lesson need. As examples, 03-T1 said “I go to the field with them to show them the different systems in the Haitian peasantry,” 03-T1 who said “we draw from the science and go in the field to make observations,” and 03-T1 who also said “agroforestry is more based on observations.” In other times the observations preceded more active practices like 02-T2 revealed “my courses have more visits in them” in which the students observe then get to realize the practice themselves. He was not the only one mentioning practices of that sort. 03-T1 also claimed his students “also go in the field and do the practice.” Other teachers preceded the practice not with observation but with demonstrations. For instance, 04-T2 said “I do a demonstration” first before they are released to do the assignment. Demonstrations were also used by 02-T1 who integrated practical experiences through visits, trips and demonstrations and 01-T2 who mostly visited and did demonstrations with the students. These trips and visits took place in farms and other private businesses; like D-01 stated “we also visit farms, we see some farmers,” and 03-

T3 added “we have trips to private enterprises.”

### **Barriers to More Practical Experiences**

However, many obstacles were also revealed that get in the way of successful integration of practices in the program of study. Sub-themes under barriers included scheduling, resources, student attitudes, laboratories, and the rural realities in Haiti.

**Scheduling.** This problem was mentioned by a few teachers. 03-T2 said ideally, “after each class you’d have a trip with the students, but when the students go out for them it’s a day of work. So, if the course lasted 2 hours, the trip is a whole day of work, from 8 am to 4 pm.” This situation is problematic because “I have always desired to make my courses 60% practice and 40% theory, but it would require that the courses I conduct them only in the field, but the way the schedule is established, the students may have two different courses in the same day, so it can become more difficult to travel with the students” (04-T3). 04-T3 concluded, “maybe [it is] relative to how the schedule is set up, it makes it difficult for my courses to be more practical (...) so schedule organization can be a handicap to having more practical courses.”

**Resources.** Many participants (D-01; D-03; 04-T1; 04-T2; 04-T3; 03-T2; 01-T1; 01-T3) expressed that the school lacked in resources to realize more practices because students do not pay tuition. 03-T2 revealed that in another school he taught in, “the trip also requires a contribution from students” but only 2 out of 4 may show up and so it may be difficult to go financially, but also because he would have to make up for the other two. That is because “the technical school is quasi free of charge [for students]” (01-T1). The director D-01 agreed that he does not pay the teachers because the

students do not pay him tuition. The teachers are “friends” and “volunteers.” He went on to say that “the tools for practice I buy them with my own money.” However, the schools have to work around that issue, because according to 01-T3, “most students, I won’t say all of them, but most of them live in very precarious conditions, therefore automatically, if you ask them to contribute financially and pay the school you’ll see them run away” therefore, “what you should offer them you cannot.” 01-T1 admitted that “the training we know we should give them is not the one they’re getting because there are too many constraints.” But 04-T3 disagreed completely “I don’t know about all professors, but I don’t have many constraints when I need to travel” with students. D-02 also mentioned the financial constraints from students who do not pay tuition. Nevertheless, they did not seem to have difficulties providing practice and theory they claim to give at the school. However, a school seemed to have fewer issues than all the others and 04-T1 revealed that “we have a farm, it’s 10 hectares” and a dormitory. D-04 explained “upon creating the university, we already had 10 hectares of land.”

**Student attitudes.** When the inability to have more practice is not due to the students not paying tuition and fees, it is about their attitude. 03-T2 revealed that “when the students go out a lot, they find it tiring; so that becomes a constraint to make more practice.” Since it depends on students’ attitude, the last cohort spent more than 60% of the time in the field he further explained. Students seemed to agree on the fact that it is also their responsibility. In FG-03 this idea came out that “sometimes us as students, sometimes by laziness, we don’t put ourselves in condition to assimilate properly.” FG-02 students disagreed to the amount of practice they received at the

school. One student argued for 70%, instead of the 50% proposed by another, claiming that “I don’t know if the other students adapted them [the field trips] like me,” somehow suggesting that it varies across students. This idea was welcomed by the group and the disagreeing student as well. 03-T2 bluntly says that “it may not be 50/50 because the students [...] have a phase where they’re more or less lazy.” Once they get out of the phase, more trips can occur. In conclusion, as D-03 put it one way or another, it is on the students, “not everybody learns the same, not everybody has the same will” and it can happen that only 50% of the students show up. If they are asked to “pay little fees” to participate in the expenses “of the big trips, they are not that interested.”

**Laboratories in Haiti.** A big obstacle is the lack of infrastructure like laboratories. Simply put, “there are no laboratories” according to 01-T3. Even though he recognized that “they [the agricultural technical schools] should have a laboratory because some work can’t be done without a lab.” 04-T2 felt that “a lab can’t be something you imagine.” However, D-01 clarified “we have a lab problem, here [in Haiti] there are no labs” because “these things require a lot of money, we don’t have money to do them.” Laboratory equipment cost more than having land parcels for demonstrations. There was at least one teacher who did not complain about the laboratory situation, 04-T3 “when I need to go to a lab for the students to make analyses on soils, I just send a pro forma to the lab under the university’s name and they take care of it.” This collaboration with external laboratories was confirmed by D-04 “while rebuilding all the labs, we try to associate with experimental farms that have big labs such as USAID.” This institution had laboratories, but they were destroyed during the 2010 earthquake and they have been in

the process of rebuilding. It is a university, it has more resources in general, like dormitories, land as well, a credit system which has many advantages for students, but they must pay tuition.

#### **Rural reality & the environment.**

Teachers 01-T1 and 01-T3 felt concern for the type of information students get as it relates to the reality they will have to deal with. 01-T1 acknowledged, “I conserve a little bit of rusticity [in the course] because of the way animal breeding is done in Haiti.” For example, pure improved breeds cannot survive in rural Haitian conditions, therefore, they must be mixed with local breeds to “meet the condition of traditional animal husbandry” Haitian farmers currently practice. He went on to clarify that “we’re in a country where it is important to learn how to use what is available” like, the use of local plants rather than synthetic products as pesticides. 01-T3 taught “how to manage the environment better” in his course. Then again, D-01 stated that “in the school we don’t encourage the chemical fertilizers too much.” It seems that the need to respect Haitian reality is closely connected to protecting the environment. 04-T2 explained that, in his course, students realized demonstration parcels experimenting about natural versus synthetic pesticides, he concluded with them if the “insects did not attack yours, and insects did not attack mine, so why should I use the chemicals?” A few directors and many teachers (03-T1; 03-T2; D-02) mentioned that the course content is elaborated based on what other technical schools are doing and the INFP required courses, but as 03-T2 expressed, “also you take into account what exists where you are, with examples taken from the places where you do the practices.” Unfortunately, adapting to Haitian reality sometimes also means not having access to resources. Like 03-T2 explained, because “there are less

agricultural enterprises, you find less entrepreneurs in the zone,” so he has less trips to businesses in his entrepreneurship course than desired.

### **Conclusions, Recommendations & Implications**

Agricultural TVET schools in Haiti want to focus on practical issues as part of their mission, without neglecting the theoretical aspect. A number of participative instructional methods emerged as a way to ensure sufficient amount of practice was covered during the training. However, there seemed to be real obstacles, financial mostly, to achieving the ideal ratio of practice and theory. The constructivist approach in education posits that curriculum, as well as teaching methods and tools should enhance learners solving problems, through various participative practices, which are conducive to all sorts of interactions among students and their subsequent engagement (Doolittle & Camp, 1999; Powell & Kalina, 2009).

The relevance of practical experiences in TVET schools was expressed through the importance of practical experiences, the purposes of practical experiences, and the amount of practical experience in the curriculum. It has been recognized that there is a need for practical experience within the curriculum in agricultural education, such as work experience on campus farms and greenhouses, hands-on training, and internships (Albert, Roberts, & Harder; 2017; Coorts, 1987). The findings are consistent with this proposition. However, practice was found insufficient in the majority of cases because of lack of resources. A general lack of resources for agricultural education and extension in Haiti has been previously noted (Albert, et al., 2017; Pierre, et al., 2018). With the exception of the university, no other schools

had farms for practice. Nevertheless, they all collaborated with external entities to have access to resources for students, including internships after the program has been completed. A study in seven African countries revealed that educators in the post-secondary agricultural training must increase practical learning activities through students' interaction with production entities such as private agribusinesses, farmer organizations, NGOs, or other, preferably with internship or other types of student placement in those institutions (Rivera, 2006).

Teachers at agricultural TVET schools used a variety of instructional methods to help students gain practical experiences. These included participative methods, research assignments, and field activities. Many recognize the necessity to find new approaches to teach agriculture to students focusing on different learning styles and problem solving (Coorts, 1987). Many teachers referred to participative methods, research and other instructional methods like reversed pyramid, they were experimenting with the students to enhance their learning. Freer (2015) suggested the reinforcement of entrepreneurial mentality in students through participatory and experiential learning methods such as debates and discussions, teamwork and problem solving, etc. Sustainable development in the curriculum requires, creativity, and participative teaching methods focused on hands-on experiences, visits to factories, field-work, laboratory work, and internships (Minghat & Yasin, 2010).

Participants revealed several barriers to providing practical experiences for students. These included scheduling, resources, student attitudes, laboratories, and the rural realities in Haiti. Facing the reality of the real-world is what situated learning refers to as the enculturation process through the integration of symbols or mental

representations stored in memory, which cannot be complete or accurate, nor applicable in real life if they are only learned in school setting (Brown et al., 1989; Vera & Simon, 1993). A few teachers mentioned scheduling conflict that do not accommodate extensive practical activities in the field. This situation was not reported as frequently as the serious financial lack that these schools face. Similar to studies in seven African countries, this study revealed that administrators and educators pointed out inexistent laboratory equipment, computers, financial sponsorship of students, instructional farms, student lodging, and insufficient teaching materials and staff development (Rivera, 2006). Another study on African agricultural TVET also found that it faced financial problems, due to lack of resources, obsolete teaching materials, and farm equipment (Atchoarena, Wallace, Green & Gomes, 2003). Rivera (2006) identified six critical areas for post-secondary agricultural education and training, which are government policy and funding, stakeholder representation, appropriate teaching methods, curriculum relevance, and institutional linkages. Ultimately, what is sought is more access to laboratories, teaching farms, libraries, computers, availability of internet connectivity, equipment, communication technology, and better facilities (Rivera, 2006).

Recommendations for research would be to realize an in-depth comparison of the curricula in TVET schools in this and other geographic departments of Haiti. It could also be helpful to gather more information about the INFP regulations and processes for certification of TVET schools. On the other hand, the ministry of Agriculture also has EMAs, which this study did not include. At this point, it would make sense to understand their cursus better as well.

Recommendations for practice is that the curriculum may benefit from a better coordination between two ministries, because some agricultural TVET institutions are under the Ministry of Agriculture and others report to the Ministry of Education. As the required skillset becomes more complex, it may be essential for these students to interact with other concentrations, therefore, TVET learning centers integrated with extension activities, may be proposed as a solution, which will allow students learning through real life experiences. Learning centers may also help in catering to some of the financial difficulties the schools face and their subsequent lack of infrastructure and resources, because the state may be able to provide a general access to these resources, which all options can utilize with proper scheduling.

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