Background Paper
Transforming the Education Workforce

Primary Research on the Design of the Education Workforce in Vietnam

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Education Workforce (Re)design: Primary Research Report of Findings
Vietnam Fieldwork

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1. Introduction

This report summarizes a research study that explored the current education workforce to inform potential areas of refinement for improving the quality of education for all students in Vietnam. Using a grassroots approach that viewed the school as the main arena for teaching and learning, the research focused on understanding the lived realities of Vietnamese students, teachers and others in the education at the school and district levels from their perspectives. The report was also informed by inputs from workshops where stakeholders exchanged their perspectives on possibilities of transforming the education workforce particularly through effective collaboration.

The following objectives guided our work:

(1) Understanding the experiences of stakeholders who make up the education ecosystem at the school levels, particularly their perceptions of how roles and functions within educational systems might change in the face of globalization and technological changes in the 21st century.

(2) Engaging in a participatory reimagining of the education workforce at different levels of the education system informed by empirical research.

Based on the research findings, the report makes recommendations regarding education workforce redesign with implications for STEM education to continue to support quality and inclusive education for children in Vietnam as well as in other similar contexts.

2. Methodology

As the focus of the study was on previously un- or under-explored topics particularly in new contexts, qualitative research was considered the most suitable methodology in conducting this research. Furthermore, a qualitative research approach was supportive of understanding of the current context as a prerequisite to introducing new ways of knowing and doing (Jamshed, 2014).

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For this study, as an exploratory methodology, qualitative research also allowed for an understanding of the multiple ways in which different stakeholders experience and perceive the current education workforce while providing an opportunity to generate and explore new possibilities through dialogue (Figure 1). Initial research reviewed the most current literature and conducting interviews with educators globally to understand broad approaches to educational workforce redesign.[3] Stage 2 focused in two countries: Ghana and Vietnam. Data and findings within this report reflect data collected in Vietnam only. Following engagement with local stakeholders in Stage 2, two one-day workshops were conducted in Vietnam (November 2018 and October 2019) to gain insight from practitioners in the field into how educational workforce roles and functions might evolve based on the current needs, challenges and constraints in the current educational system.

Figure 1. Research Design

Data collection and analysis

Data collection for this report occurred in Vietnam in the months of November 2018 and October 2019. The data collection utilized qualitative methodologies within a social constructivist approach. The research team engaged primarily with educational stakeholders at the school level who have participated in education delivery to students. A limited number of interviews took place with district level officials. A combination of in-depth interviews, focus groups, visual methodologies and workshops were used with school staff, teachers, parents and other stakeholders (including district officials).

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[3] Stage One research was designed to inform the research study in Vietnam as well as the Education Commission's recent report: Education Commission (2019). *Transforming the Education Workforce: Learning Teams for a Learning Generation*. New York: Education Commission.

The data collection was conducted in Hanoi, Ho Chi Minh City and Can Tho. The selection of the regions and districts were aimed at providing diverse representations of education delivery, primarily in the urban areas of Vietnam.[4] Selection of research sites was coordinated and approved through the Ministry of Education and Training.

As shown in Table 1, the data collection included in-depth interviews and focus groups, the photovoice and workshops. Data was collected over the course of a year.

In-depth Interviews (November 2018). In depth interviews (IDI) were conducted with some participants and provided an opportunity for the researchers to develop rapport to gain detailed insights especially on sensitive topics such as individual opinions, current challenges within the system and specific examples that highlight areas of growth. IDIs allowed for follow-up questions and probing to arrive at a more nuanced understanding of individual perceptions and experiences.

Focus Groups (November 2018). Focus groups were facilitator-guided group discussions around a particular topic. As a group activity they allowed participants to share and compare their experiences and perceptions with each other with the purpose of generating new ideas on a topic of shared importance. Focus groups were used to engage stakeholders to discuss current challenges as well as potential solutions and future opportunities to improve the educator workforce both at the district and school levels.

Photovoice (November 2018). A qualitative method linked to community-based participatory research (CBPR), involved selected participants (students and teachers) taking photographs and using the stories about those photographs, photo elicitations, to "express needs, history, culture, problems and desires" in their everyday realities that were of importance to them (Nykiforuk, Vallianatos & Nieuwendyk, 2011, p. 104; Wang & Burris, 1997). In the photovoice methodology, participants were provided with tablets for 2-3 days with instructions to capture images related to teaching and learning. Thereafter, in a focus-group setting guided by a facilitator, participants engaged in a discussion to contextualize the photos and provided a preliminary analysis of the photographs they selected (Wang & Burris, 1997).

Workforce Redesign Workshop (November 2018). Following analysis of the qualitative data, different scenarios were created as prompts during a one-day redesign workshop. Scenarios based on the data collected framed different education delivery challenges found during data collection. Focusing on abductive reasoning, the aim of the workshop was to collectively and creatively come up with plausible solutions that include different educator roles and supports that could be possible in a redesigned education system including future workforce needs (Zheng, 2017).

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[4] The research team requested permission to conduct research in rural areas of Vietnam but was not granted official access to schools in rural areas.

Adaptive Learning Platform Workshop (October 2019). The report was also informed by inputs from training workshops related directly to educators in the STEM field (math instructors) who were part of a pilot study of adaptive learning platforms for math instruction. These workshops were conducted in Hanoi, Ho Chi Minh City, and Can Tho in October 2019. Participants in the workshops (teachers, school administrators, DOET representatives, university faculty and pre-service teachers) provided additional perspectives on the education workforce, related to adaptive learning platforms, educator collaboration, and their potential to reform Vietnam's education workforce.

Overall, the research approach provided an opportunity to see the educator workforce from multiple perspectives within the educational system.

After transcribing the interviews, focus groups and photovoice elicitations, all data was analysed in an ongoing cyclical pattern drawing upon post-intentional phenomenological methodologies. Post-intentional phenomenological research seeks to better understand "the ways in which we find ourselves in the world," (Vagle, 2014, p. 122) which was captured through interview and focus group data. Visual data, collected through the photovoice methodology provided a secondary level of understanding the lived experiences of educators and students and was analysed using both open and structured analyses (Collier & Collier, 1986). The unit of analyses focused on the following key areas:

Social order: the context in which the school is located, including within local and national policies and priorities.

Arenas of the school spaces: the features of these that reflect how policies have been taken up in terms of beliefs and values (e.g., norms, routines, rules, facilities, expectations)

Setting: the people in action within the arena who interact with each other and create or constrain opportunities for pupil learning.

Table 1. Data sources and research participants

Research questions	Data sources	Stakeholder Group
(1) Understanding the experiences of stakeholders who make up the education ecosystem at the school levels, particularly their perceptions of how roles and functions within educational systems might change in the face of globalization and technological changes in the 21st century.	- Individual in-depth interviews - Focus groups - Photovoice	School leaders, district officials, teachers, school support staff, students
(2) Engaging in a participatory reimagining of the education workforce at different levels of the education system informed by empirical research.	- Facilitated workshops - Informal communications	(Pre-service)Teachers, school leaders, district officials, school support staff, educators, community members, parent advisory group members.

3. Key Findings

This section first presents findings from the photovoice, highlighting students' perspectives as embedded participants of educational ecosystems. We then present the findings of the educators (i.e. teachers, school administrators, DOET representatives, university faculty and pre-service teachers) who are embedded actors within the educational ecosystem. The findings related to the educators included data from the in-depth interviews, focus groups, photovoice[5] and workshops.

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[5] Visual data is included within the findings as it related to the overall themes. While visuals in some instances align with multiple themes, for purposes of this report, the visuals are displayed once within the report and are referenced by name in instances when they repeat across themes. Additionally, some visuals captured by students and adults demonstrate similar themes. However, photos captured by educators are not included in the

It is important to note that the focus of the research was not to imagine how to fix the Vietnamese educational system. Instead, the aim was to understand the current experiences of individuals within the system, and their roles and functions, might be reimagined for the future education workforce redesign.

3.1. Students: What they value as support in their learning

3.1.1. Peer collaboration and peer teaching

Students noted that they valued peer collaboration as a key component of their learning. Students reflected on opportunities where they were able to learn from each other in addition to how they orchestrated their own peer collaborations and peer teaching outside of school hours. Both primary and secondary school students noted the value of technology as a tool for collaboration and secondary students provided evidence of how they use technology to extend their learning beyond the classroom. Peer collaboration and teaching was mentioned positively by students across Vietnam.

> *Yes, we're sending out, we are using Messenger (Facebook) to sending to others, chitchatting with their friends, sharing the [assignment] results to the Internet.* ***So if we don't have wifi, we're blind, blind, totally blind.*** *I agree, we cannot do everything just by reading books like the students books they gave us, it's not enough. (Secondary School Student)*

Student visual data demonstrated that students perceived collaboration and peer teaching to be fluid across both physical and digital learning environments. Student photos reflected images of spaces they engaged in collaboration both within the classroom and outside of the classroom (see Images 1-4). Within the classroom, students reflected on how teachers arrange the classroom to facilitate collaboration among peers (see Image 3). Students shared photos reflecting how they collaborated through the use of technology. This was especially prominent among younger students' visual data, perhaps highlighting how embedded technology is already in their daily lives.

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student findings and vice versa. A complete listing of visuals included within the study are available in the Appendix.

Image 1.

Image 2.

Image 3.

Image 4.

3.1.2. *Access to learning spaces beyond the classroom*

Students noted that they valued using multiple spaces to study both within the school setting as well as in other locations such as their homes and online. For many students, learning spaces where defined by their immediate needs, especially as they related to succeeding at school. While students shared that they learned extensively in traditional classroom settings, they also indicated that non classroom locations were important to their learning, especially related to studying, citizenship development and using technology. Below, students discuss different locations within their school used for learning beyond the classroom:

> *This is our library which is very large and it is a peaceful and a silent place. So, we can spend our time self-studying or just concentrate on our work very well. (Secondary School Student 1)*

> *In our school, there are also labs, computer rooms for many subjects. We can do experiences there too. Very real knowledge. (Secondary School Student 2)*

Visual data also reflected learning environments that were beyond the classroom. Students shared photos that included sports fields, public and school celebrations, and online spaces that supported their overall learning.

Image 5.

Image 6.

Image 7.

Image 8.

3.1.3. Health and welfare related services at school (e.g., guidance counsellors, psychologists)

Students (and educators) noted the intense pressure placed upon students to succeed in school. Much of the pressure experienced by students was driven by parent and societal expectations to perform well on qualifying exams for post-secondary education opportunities:

> *… studying for Vietnam high school students is pretty heavy, I believe. Yeah. And students, especially at this age, can have a lot of health, physical health and **mental health issues;** they need somebody to talk to because they don't have that kind of relationship with the teachers or between teachers and students. I believe that we need more of somebody who we can talk to, to understand and hear our stories. It will relieve the stress. (Secondary School Student)*

Visual data demonstrated the intensity of the school day for students. While students shared images of classroom instruction where they engaged in learning (see Image 9), these images contrasted with ways students worked to cope under the intense pressure they felt at school (see Image 10). In Image 10, a student shared

how she compartmentalized her day to cope with the stress she feels she is under from school:

> *You see that it has five sections. The first section here is our main subject that we study every day. This [section] is more about like extra, extra classes. This [section] is where you can put those things that are not so important but you don't want to throw it away [Laughs]. They put it here [points to section]. This place is, especially for girls, skin care. Everybody wants to have beauty because at the end of the year we all want to look pretty, in our year book! No one doesn't want to look ugly like that. Right? So we are taking our skincare while studying at the same time..This [section] is my personal interest. It shows someone admire and who inspires me [K-Pop]. This is my idol. And the group's songs inspire me in my work. They [K-Pop] say that don't pressure yourself too much. Live your life instead of studying too much. (Secondary School Student referring to Image 10)*

Image 9.

Image 10.

3.1.4. Desire for choice and flexibility in educational pathways

Students shared that they desired more opportunities to pursue educational trajectories that were more closely aligned to their personal interests. Students greatly appreciated opportunities to engage in sports (see Images 2, 5, 7 and 8), the arts and social sciences and worked to create their own clubs to pursue these interests. Several of them mentioned that their parents have extremely high expectations of them, particularly in terms of academic performance. In parents' views, non-academic learning such as arts education do not lead to high paying jobs; as a result, students are expected (by their families)to study very hard so that they have the potential to become respected professionals in society.

> *[The parents] asked us to think: what would you do with this kind of artistic education? How are you going to earn your living with singing or playing the piano or the guitar? It's just you don't make money from those things. And if you don't listen to us, you don't have a sustainable and enjoyable life later on. That is why they want us to be doctors, teachers, lawyers. (Secondary School Student 1)*

> *This is weird but some parents think it's normal when they want us to go to the extra class from the morning until 10 PM. Yeah, it's true. (Secondary School Student 2)*

3.2. Students: What they would like to change or would like more of in their daily schooling

3.2.1. Better parental awareness of learning in the 21st century

Some schools that participated in this research study had interactive smart boards in classrooms and specialist teachers who taught technology classes to students. In these schools, students had access to computer labs and demonstrated fluency in using technology. Students (and educators) demonstrated a keen interest in using technology, especially through the photovoice submissions. In the current system, technology is used as a tool to support learning. However, many noted that parents were a main challenge to the use of technology as a tool to accelerate and support learning.

> *Yes, we're sending out [notes, homework results] using Messenger (Facebook) to others. As we are chitchatting with friends, we are sharing (homework) results via the internet...the school's stuff is not enough for our entrance exam. We have to do more at home. So if, we don't have wifi, we're blind, blind, totally blind...we cannot just do everything by reading books like the students books they gave us, it's not enough...but parents think we are using our phones to play games instead of studying, and they're checking...**by the time I hold my phone in my hand, my mom and parents say: you never do your homework, you're a lazy girl.** (Secondary School Student)*

3.2.2. More opportunities to engage in the arts and student driven activities/clubs

Students expressed interest for opportunities to engage more actively in the arts but due to little choice and limited time in the school curriculum, this was something they explored in activity clubs. While activity clubs were held on school grounds, students were responsible for organizing such activities and expressed frustration that they barely have mentorship and support from both teachers and parents to lead these clubs. Specific areas of interest were in pop culture and music.

> *I actually say that we need to pay more attention in clubs and more on subjects like arts activity. I think this is not only the school problem. It is a parent problem too. Many students are not allowed to do what they want because their moms want them to have a successful life. That is the difference between our parents and ourselves. That the way we think successful is we are happy with what we are doing, while our parents mainly think that we'll need to have a fine job, a good house, or to be doctor... **So they push us to study as much as possible.** Teachers also say you should pay much attention because the final exam is arriving in a few months. So, that's why they don't think that the clubs are important to students. (Secondary School Student)*

3.3. Educators in the settings: What they value and what changes they would like to see moving forward

3.3.1. *Greater autonomy at the school level to determine education activities and personnel*

Both school administrators and classroom teachers noted that there was a need for more agency and autonomy at the school level, especially in areas that related to staffing and professional training decisions as well as parent involvement. Study participants noted that the diversity of student populations (i.e. students with disabilities, student learning progressions) did not always align with general educational policies and societal expectations of education.

> [A]ttention should be paid to the relationship between teachers and students' parents. The **power of parents in the past was very little but their say has recently become bigger**. For example, if the school needs to organize an activity, the parents' association only needs to raise their voice so that the activity can be removed. Such involvement might hinder the educational process of the school. Because if the school wants to organize the activity for educational purposes but parents do not see any educational intent in that, they can dismiss it, which will not bring about any educational results... there should be reasonable policies on the level of parental involvement in school activities. On the one hand, parents can be consulted about those activities **but they should not have too much power, their opinions should be considered as reference.** (Teacher)

In fact, within some of the workshop discussions, educators suggested reducing parental influence in educational decision making. For them, the parents tended to be drawn to competitions/contests which aligns with the their wishes but does not develop student's academic knowledge properly and contradicts the school's development goals for student learning. We will not discuss in-depth this issue here because of the necessarily limited scale of this report.

Visual data reflected school conditions that were often challenging for educators to address independently yet they related to working conditions for the adults (and the learning environments for students). The conditions of some school buildings demonstrated facilities that were in great need of repair to maintain safety. The increasing challenge of schools in urban settings being situated next to high rise apartment buildings presents difficulties for educators to provide quality learning environments for all students, especially due to overcrowding of classrooms. Parents, teachers and school administrators noted this as an extreme challenge for teachers and students and expressed frustration that educational policies did not allow for school administrators to have more local authority to address these issues.

Image 11.

Image 12.

Image 13.

3.3.2. *Teacher shifting roles and educator collaboration*

In a time where technology is rapidly changing the world (Schwab, 2015) and the teaching profession faces increasing pressure to adapt to student populations, teachers and other stakeholders realize the importance of how the role of education system extends beyond academics. Interest in including behavioral health supports to assist in developing more pro-social behaviors was emphasized across stakeholders (parents, teachers, school administrators, MOET officials). Also, educators noted the significance of non-academic educators who might have a positive effect on the functioning of the entire school body. For example, in one location, the Student Activity Director was highlighted as a key figure in students' daily learning as this individual established a sense of order by simply organizing the motorbike parking garage so that students could park their motorbikes efficiently and safely before heading into classes (see Image 16). In addition, the Student Activity Director noted that a focus on more support staff to support learning is still critical. This provided an excellent example of how targeted support roles can have a tremendous impact on learning and well-being of students.

> *If school needs to have some personnel to support students' learning, I think there should be more teachers, like supporting staff, not necessarily a supervisor in the discipline area, but in learning, to support learning. (Student Activity Director)*

> *It is necessary to add a number of positions, for example someone to teach life skills for students or community integration education, someone that guides students to self-study which is also very important, for example through learning projects to develop students' thinking abilities to be more aware of real life problems in society. In addition, it is also important to support students in*

learning other languages, these are areas I find very important in the 4.0 era [the Industrial Revolution 4.0]. (Teacher)

Having support staff--whether in academic or non-academic positions--could provide more time and space for teachers to engage in collaborative work which actually was not mentioned as a daily practice at the school level. In fact, visual data from educators did not reflect evidence or was unable to capture moments of educator collaboration. Instead, current evidence suggests that teachers were likely to focus on the facilitation of student collaboration, and on how they were working to deploy modern teaching methodologies within classrooms.

Image 14.

Image 15.

Image 16.

Although "teacher collaboration" did not come up clearly in teacher photovoice data, most participants at the training workshop in October 2019 acknowledged the importance and benefits of teacher collaboration. In fact, analysis of data from teacher interviews and personal communications indicates that educators' awareness of the increasing need for collaboration can be explained in two ways. First, educators became acutely aware that their roles and functions as teachers were changing. Educators commented that while in the past, teachers' primary role used to impart knowledge, they now considered themselves to be facilitators who assist students in developing their full potential and capacities. Second, in the face of technological changes, educators noted, it was much more convenient for them to connect with colleagues to do collaborative work. As evidenced in the next section related to technological application in school, using Skype and other online platforms, teachers were able to connect with other teachers to make their classes more effective and engaging. In general, they found it imperative and beneficial to establish

forms of mutual support or collaboration among educators including non-academic staff to achieve an education purpose.

> *When I was 12, my teachers were gurus. As a Vietnamese saying goes 'Without a teacher I dare you to make your way in life,' teachers would lecture and we students took as many notes as possible. It was just one-way learning. But now students are much smarter. They question the information and want [their voices] to be heard. We [teachers] can't know everything. We need to work together, with other teachers, with our own students, to learn together. (Teacher).*

It is evident that the teachers were aware of their shifting functions and appeared to readily grasp opportunities to collaborate for effective teaching. However, in order to make teacher collaboration happen, educators suggested a number of specific conditions which are presented in the last section of this report (see Policy Recommendations).

3.3.3. *Greater harnessing of digital technologies*:

There was a strong belief among participants that technology will play a key role in teaching and learning in the future, but few educators reported having experience using technology for learning in their own classrooms and schools. In fact, visual data regarding technology was not as prominent for educators as it was for students. One visual of students in a computer lab demonstrated student's access to technology. While technology was also embedded in many classrooms (white boards, power points), it was not visually highlighted by educators.

Image 17.

In addition, there were ideas raised about how mobile devices, for example, might be harnessed for learning (beyond their use for 'research' etc). However, as technology becomes important for learning, some points about the use of technology will require 'rules of use' especially at the school level, but broadly in terms of use of technology for data management, planning at the school and district levels. For example, at the school level, policies about the use of technology would need to change for secondary schools. Teachers would need to be trained on how to leverage technology for more engaging and effective learning. For example, an educator said:

We should take more advantage of IT advances in teaching. We are using technology, students are using technology, but it's not always used properly, not effectively. For example, my students spend much time on social media, surfing Facebook, etc. I myself use PowerPoints and videos in my class. The class was indeed more interactive and engaging. But I know many teachers, though applying fancy technologies, still go with teacher-centered method. (School principal)

The principal's remarks reveal that technology is only a tool to enhance teaching quality. No matter how sophisticated the tool is, if not used for the correct purpose, it would not bring improvement in learning performance, but could do harm rather than good. In fact, most participants involved in the second workshop (Oct. 2019) were Math instructors who were implementing the adaptive learning pilot program or were from the comparison schools. Just as most other teachers in the STEM field in Vietnam where there have been many attempts to promote STEM education towards the industrial revolution 4.0 (Nguyen & Dang, 2019), Math teachers expressed particularly high excitement of applying technology in their teaching. Nevertheless, few talked about pedagogical rationale for using technology as well as the ultimate goal that the education was heading towards.

Another aspect of applying technology for effective teaching concerns teacher collaboration. As mentioned earlier, educators saw enormous benefits of technology in engaging colleagues and other stakeholders in their own professional work. In the workshop on adaptive learning (Oct. 2019), educators exchanged ideas related to aspects of effective collaboration and how ALEKS (an adaptive learning pilot program) would assist them in forming teams to assist students' learning. Given the commitment of Vietnamese stakeholders to technological application in teaching and learning, adaptive learning appears to have a great potential to inform teacher collaboration and contribute to promoting STEM education in Vietnam.

ALEKS is very powerful. It generates a lot of student data. We can use it not only for evaluating students' performance but also for improving our own teaching practice. I have used only a small amount of student data. But we are excited to work together once we make fuller use of the data. We can do kind of action research and improve our practice from that. (Teacher)

Adaptive learning is new in Vietnam but I believe that the community of educators who are using this technology in STEM education is growing. And they have their own online forum, assisting each other, discussing good practices, and sharing the materials. I want to join them and see how I can learn from them as well as support them. (DOET representative)

3.3.4. Modernization of teaching practices, mindsets and learning environments

In order to meet the needs of diverse students in the same learning space, educators noted their desire to see curriculum and instruction become more modernized so it is challenging for all students. Teachers noted that they have had extensive training in facilitating peer collaboration and frequently utilized a variety of engagement structures to coordinate peer collaboration and teaching within their daily teaching. However, changes to the curriculum also need to ensure that learning does not follow a rote learning model as is currently the case.

When we talk to older people, I realize that there is a real gap which should be also a fundamental change regarding teaching methods. Teaching methods can decide many things, including the arrangement of tables and chairs. For many years, the tables and chairs have been arranged like that, in the future or in a few years, they will be arranged in circles to facilitate connection and interactive activities. (Pre-Service Teacher)

In Vietnam, the Confucian spirit has been absorbed in the people's mindset for thousands of years, and according to me, it is impossible to reject the Confucian thought but maybe there is a way to make use of Confucianism as a social model or something like social standards but how it can be similar to the Korean model, may be to have a more accurate and standardized direction because we can't become a Western country. (Teacher)

As for workplace conditions, participants widely noted the importance of ensuring the conditions of work were adequate for teaching and learning (Images 11-13). Overcrowded classrooms were particularly important to note as they have implications for teaching practices, especially related to teachers shifting roles to facilitate learning in more student-centered teaching practices.

... in the recent incident as everyone remembers, the teacher slapped students (in Quang Binh), according to me, the reason was that teachers had to manage nearly fifty students, which was a great pressure for them. In addition, salaries for teachers are also inadequate. In part, because teachers are also people, so they are out of control and have such violent actions, which is also one of the challenges. (Teacher)

3.3.5. *Enhanced capacity for providing inclusive learning environment*

Teachers recognized that existing staff do not have skills, confidence and experience to support students with disabilities. They noted the need for 'resource teachers' (specialists) who can support teachers with strategies and approaches to ensure all children can participate in learning. While integration of students with special needs

into mainstream schools was welcomed, teachers noted that they have neither the skills nor the materials to adequately serve these students.

At one school, a parent of a student with a disability had been forced to quit his job to support his child at school. This parent attended school daily with his child, waiting outside the classroom during each school day. Teachers would send the child out to his father as needed (i.e. calm the student down or to provide individualized instruction to the child); however, the father was not allowed to support his student inside the classroom. The parent expressed great frustration in the educational system. He shared that he had researched the policies and rights his child had; however, after writing to multiple units within the middle tier of the system, he was not able to get middle tier officials to respond. Later, the authorities indicated that there was no qualified staff to provide additional support, even though the policy stated that the child was entitled to it.

> *Currently, we have only one student with a disability. His parent follows him to class and sits outside the classroom to control (him)... Because it is inclusive education here, we still have such special students. (School Principal)*

Some schools recognized that they served students with disabilities but they reflected that these students provided a hinderance to the learning environment of the whole class.

> *For example, there is a special needs student in [teacher's name] class. The teacher in that class needs to pay more attention to the student because we have the inclusive education, which doesn't separate the special needs student from the regular students. In fact, they should be studying at a separate school. Because while other students are paying attention to the teaching, the special needs student is not well behaved, the teacher must stop teaching to handle him. (Teacher)*

Visual data provided by educators highlighted ways that schools were working to be more inclusive, for example, providing environmental cues for appropriate student behavior (see Image 18 where directional arrows are placed on steps to cue students to move appropriately)

Image 18.

4. Concluding Remarks and Implications for Policy

Fieldwork in Vietnam revealed that education stakeholders (including but not limited to teachers, students, school staff and district officials) take pride in their engagement with teaching and learning activities. In many instances, despite challenges with large class sizes and disparity in resources, many Vietnamese educators were resourceful and innovative in working around limitations. The findings presented above should not be interpreted as a reflection of all education in Vietnam but simply as a snapshot of the landscape in the selected schools. These findings, as well as the processes by which they were arrived at, provide a starting point to understand the future directions for education in Vietnam and highlight the value and importance of including all stakeholders in education workforce reforms that may be proposed in the future. Based on the research findings, we suggest five areas for improvement that directly impact education workforce reform and should be considered at the national policy and school levels.

4.1. Involving education stakeholders in designing the education workforce for the future

As the main implementers and beneficiaries of education in Vietnam, teachers, staff and students have the necessary experience to understand their contexts as well as their needs. They are those who are best situated to perceive their own shifting roles and functions and are directly impacted by the changed education workforce. It is imperative for state- and district-level policymakers to engage with these stakeholders in planning and reforming the education workforce. This engagement should also include cooperating with communities and researchers in ways that policymaking can be informed by multiple sources of feedback and empirical research.

4.2. Attending to equity in conditions of work

Conditions of work include but are not limited to classroom spaces and sizes and the assistance that would be needed to manage and effectively teach large classes. For both elementary and secondary educators, learning environments were often overcrowded. In rural areas, participants noted that workplace conditions were especially challenging and often barely met requirements to meet basic human needs (i.e. washrooms, safety). Improved work conditions are important for attracting and retaining a qualified education workforce and ensuring students receive quality education.

4.3. Need for on-going and updated teacher training programs

There was an emphasis on 'welfare' as being important but also as a core part of teacher / educator identities and community relationships. Currently, while teachers and support staff recognize that additional services may be necessary for students,

they also acknowledge that additional (and specialized) assistance would be welcomed particularly for students with disabilities (learning, physical) and basic health needs (routine health exams, dental care) which are currently lacking in education service delivery. Additionally, educators noted the value of moving towards 'facilitator' role rather than the source of knowledge. Therefore, continuous professional development and updated teacher training programs would be needed to ensure those roles are served effectively.

4.4. Facilitating teacher collaboration to support interdisciplinary STEM education curriculum

As suggested in the Education Commission's 2019 report, "it takes a team of professionals to educate a child," meaning that educators need to work together to be effective and assist learners with the greatest needs (Education Commission, 2019, p. 12). This particularly holds true for STEM education, an interdisciplinary field of practice that should be built in across the curriculum rather than in a given subject or class in isolation. In Vietnam, as STEM has been the focus of the recent educational reform (Nguyen & Dang, 2019), it is critical to create relevant conditions for STEM educators to develop and implement an interdisciplinary curriculum. To make collaboration among STEM educators effective and sustainable, there should have:

- mechanisms in which educators are given enabling conditions for developing forms of professional learning communities (Hairon & Tan, 2017)
- a commonly agreed set of protocols or models to guide educators and administrators particularly at district and school levels along the stages of collaboration so as to make full use of the current resources, skills, and expertise of the local workforce
  - agreed on protocols for partnerships with community resources such as industry and professional organizations
  - agreed on models of practice within educational settings

4.5. Harnessing technology for the Industrial Revolution 4.0

Teachers as well as students demonstrated the value of technology as a tool to enhance learning. Some schools within this study had technology embedded in computer labs and classrooms had smart boards which teachers used to project learning materials. However, teachers need to be empowered to be able to leverage technology for learning experiences that enhance students' problem-solving, creative thinking, and adaptability. Specifically, teachers need to:

- have the necessary conditions (leadership, time, resources, and support) to unleash their own potential and creativity
- be guided by empirical evidence from research/ evaluation to ensure proper and impactful application of technology in their teaching practices.

Students at both the primary and secondary levels demonstrated awareness and ease in using technology. In all areas, demonstration of how to use electronic tablets for photo capture and photo storage was taken over and led by students. However,

proper application of technologies in education, particularly in the field of STEM, requires a balance of the high-tech skills and high-touch skills (Thornburg, 2002). In general, no matter what technology is used, it is crucial to make a meaningful connection between technology and the broader aim of education. This connection should focus on nourishing human connection and humanness for the development of whole learners.

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Appendix Visual Data

Student Visual Data

Image 1	Image 2	Image 3	Image 4	Image 5
Image 6	Image 7	Image 8	Image 9	Image 10

Educator Visual Data

Image 11.	Image 12.	Image 13.	Image 14.	Image 15.
Image 16.	Image 17.	Image 18.		

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