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An Overview of Conceptualizations of Effective Pedagogy at NIE

Technical Report

Submitted as part of RS-SAA Grant RS 2/19 SC

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INTRODUCTION

At the heart of teacher education in Singapore, is a belief in the integral connection between a teacher's philosophy of education and his/her pedagogical practices. In 2017, the Singapore Teaching Practice (STP) was launched at NIE's Redesigning Pedagogy International Conference. The STP model makes "explicit how effective teaching and learning is achieved in Singapore schools" (MOE, 2017a, para. 1). Pedagogical Practices lie at the core of the model and comprise four teaching processes – positive classroom culture, lesson preparation, lesson enactment, assessment and feedback – which are connected to 24 teaching areas.

The STP is a nation-wide model co-developed by the Ministry of Education (MOE) and NIE. It provides a common language among the teaching fraternity of the varied range of pedagogies that supports holistic, positive, and constructivist forms of learning. This is reflected in the nation's philosophy of education known as the Singapore Curriculum Philosophy (MOE, 2017b). From 2017, the STP was rolled out to all primary and secondary schools in Singapore. MOE has also launched the Student Learning Space where MOE Curriculum Specialists and teachers can design and upload lesson plans and other resources. The lesson plan templates utilize STP terminology and prompt teachers to make connections to STP.

At NIE, STP has been infused in the Assessment of Performance in Teaching form used by supervisors to evaluate student-teachers during their practicum in schools. In December 2016, the launch of the extended 16 month PGDE programme also saw the introduction of Pedagogical Practices (PP) – a 16 week core course for all PGDE Primary, Secondary and Junior College student-teachers. The PP course will also be integrated in NIE's Degree and Diploma programmes in the coming years. The first session of the course begins with an introduction of the STP model and prompts students to think about what effective teaching encompasses. Subsequent sessions focus on four processes of STP and related teaching actions such as differentiated instruction or collaborative learning. NIE faculty have also worked closely with MOE on the development of STP such as through STP Steering and Working Committees as well as through providing key research to inform various teaching processes and actions related to the model. These have been published on the STP website as well as chapters that have been compiled into an Ebook. The pervasiveness of STP and its adoption by schools across the country draw attention to pedagogical effectiveness as an important object of inquiry. This study compares how pedagogical effectiveness is conceptualized in Singapore, specifically from the perspectives of NIE teacher educators.

Overview of key pedagogical movements

Prior to the early 20th century, pedagogy tended to be conceived as a science of teaching, centred on didactics or the processes of learning and the particular content to be learnt (i.e. knowledge and know-how) (Tochon & Munby, 1993). Such views were later challenged by various movements in education, notably the progressive movement inspired by the philosopher John Dewey. Progressive pedagogy was antithetical to reproductive pedagogy. While the latter positioned the student as a passive recipient of an already established canon of knowledge, the former emphasized the student as an active learner and central to the goals of education. Dewey (1915) proposed a Copernican-like revolution in

which the center of gravity shifted from that which was outside the child: the teacher, the textbook, and the school to the “immediate instincts and activities of the child himself” (p. 34). Essentially, progressive pedagogy is mainly characterized by the following: developing the child’s innate and experiential knowledge through stages (Dewey, 1902), relating knowledge to the real-world (Dewey, 1915), transforming the child’s experiences with his/her physical and social world into an educative exercise, and using knowledge of the past as a means to understanding the present (Dewey, 1938).

Progressive education evolved over decades and took on many forms from child-centered schooling, curricula differentiation, to life adjustment education (Ravitch, 2001; Lagemann, 2000; Kliebard, 2004). Broadly, the rise of progressive education in the early twentieth century laid the foundation for the shift from pedagogy as a science of learning to pedagogy as both an art and science of learning (Murphy, 2008). Shulman's work on Pedagogical Content Knowledge (PCK) was particularly important in advancing the notion of pedagogy as art. He (1987) defined PCK as follows: It represents the blending of content and pedagogy into an understanding of how particular topics, problems, or issues are organized, represented, and adapted to the diverse interests and abilities of learners, and presented for instruction (p.8). PCK thus constitutes the artful “transformation” (Shulman, 1987) of subject matter through intentional use of a range of instructional strategies and assessments for specific purposes and within specific contexts (Park & Oliver, 2008).

Since then, various movements in education have contributed to a range of pedagogical approaches. The more influential ones include Constructivist pedagogy, Critical pedagogy, Culturally Relevant pedagogy, and Cosmopolitan pedagogy. Each pedagogical approach focuses on different educational aims:

1) Constructivist pedagogy – Informed by constructivist learning theories by Piaget, Vygotsky and Dewey, this approach centers on enabling students to construct and co-construct knowledge and meaning from experiences. It subscribes to the view that learning occurs from the experiences of students and that social interaction is fundamental to cognitive development (Lave & Wenger, 1991). Learning is transactional and as students interact with texts, learners and environments, they are also active producers of meaning (Rosenblatt, 1994).

2) Critical pedagogy – Informed by Poststructuralist movements from the 1970s, this approach centers on “educating students to become active, critical citizens (not simply workers)” (Giroux, 1988, p. 7). Drawing on the work of Paulo Freire, Michel Foucault, postcolonial and Marxist scholars, critical pedagogues draw attention to how the values of a dominant class are perpetuated through symbolic and cultural capital leading to the continued oppression of subordinate classes. Critical pedagogies empower students to dialogue about and critique discourses of power and ideology, class distinctions and systemic inequities in education.

3) Culturally Relevant pedagogy – Influenced by the movement of multiculturalism, this approach gained popularity in the 1990s. A key proponent was Gloria Ladson-Billings (1995) who argued for a more dynamic and synergistic relationship between home/community culture and school culture. In her seminal work, Gay (2002) proposed three

aims for a culturally responsive approach to teaching that involves equipping teachers to: acquire a knowledge base about ethnic and cultural diversity, design curriculum and implement strategies that are responsive to cultural diversity, and create classroom cultures that are conducive to learning for ethnically diverse students.

4) Cosmopolitan pedagogy – Global citizenship movements and discourses around twenty-first century education have turned attention to how education can equip students with the kinds of skills and dispositions that promote global awareness and ethical engagement with others who have different beliefs and values. The notion of cosmopolitanism, or citizen of the world, has a rich lineage rooted in the ideals of philosophers such as Socrates, Confucius, and Enlightenment thinkers. Today, contemporary scholars conceptualize cosmopolitanism as encompassing multiple forms of belonging so that one may be rooted to home while being open to the world (Appiah, 2006; Hansen, 2011). Cosmopolitan pedagogies are centred on developing key critical-ethical dispositions of hospitality and openness to others as well as skills to negotiate, navigate and network with multiple and diverse others in an age of global interconnectedness (Choo, 2018; Nussbaum, 1997; Rizvi, 2009).

The above provides an initial overview of key pedagogical approaches informed by specific historical movements and grounded on various perspectives about the ultimate aims of pedagogy and what constitutes pedagogical effectiveness. Broadly, such an aim could be centered on student agency, critical empowerment, intercultural responsiveness, and global-ethical engagement.

Objectives

This study examines the conceptualization of pedagogical effectiveness in Singapore, specifically from the perspectives of curriculum studies tutors at NIE. The research examines how pedagogical effectiveness is conceived by NIE faculty teaching curriculum studies courses.

In total, 15 NIE faculty members from seven academic groups (NSSE, ELL, HSSE, VPA, PESS, ALC and MME) were interviewed using a semi-structured interview format to elicit free response (Table 1). They consisted of lecturers, senior lecturers, assistant professors, associate professors and programme leaders (Table 2). Interviews lasted from 30 minutes to 60 minutes and the interview questions are in Appendix A.

Table 1. Composition of interviewees by Academic Group

Academic Group	Number
NSSE	4
ELL	3
HSSE	2
VPA	2
PESS	1
ALC	2
MME	1

Table 2. Composition of interviewees by Designation

Designation	Number
Lecturers	6
Senior Lecturers	5
Assistant Professors	2
Associate Professors	2
Programme Leaders (overlapped with above)	4

Significance of the Study

Findings will strengthen the training of curriculum studies tutors in NIE and inform ways to develop theoretical understanding of pedagogical models and how STP may be situated in relation to these.

Findings from the study will also provide a macro-perspective that will inform NIE's approach to strengthening theory-practice connections as well as in highlighting possible gaps that may exist as we continue working with MOE to develop STP.

SECTION I. EXECUTIVE SUMMARY OF FINDINGS

Disciplinary Pedagogies

Several common themes emerged amongst the pedagogies employed by the faculty from different Academic Groups. For HSSE and NSSE, the inquiry approach was most frequently employed. While in ELL, MME and PESS, there was a common emphasis on the centrality of Connection in their pedagogies. ELL emphasizes the connection between text and real-life, and between various texts. On the other hand, MME places emphasis on making connections between levels of representations in mathematics. PESS places emphasis on the theory-practice connections such as the link between pedagogy and actual classroom implementation. In the case of VPA, focus is on design thinking which involves a central consideration of the end-user while designing curriculum. Lastly, ALC places emphasis on authentic learning where real-life materials are chosen for the setting of language learning and assessment tasks.

Values and Pedagogy

Across AGs, interviewees emphasize care, empathy and respect as the values that they find important to their teaching. Several key trends emerged from analyzing the interviewees' responses: NSSE, ELL and ALC interviewees all converge towards using role modelling to translate values into teaching. ELL interviewees also tend towards using dialogue to facilitate value-teaching.

Innovative Pedagogies

A few key trends emerge across the AGs which are the use of Modelling, Reflective Learning and Collaborative Learning. Firstly, Modelling is used in ELL, VPA, HSSE and MME, whereby the interviewees model demonstrations of what goes on in a classroom and allow the student teachers to experience the lesson through the lens of a student. Secondly, Reflective Learning was also a common theme across AGs which places emphasis on student teachers being reflective practitioners. Thirdly, Collaborative Learning was also commonly used across AGs where student teachers work in groups to understand course material.

Benefits and Challenges of using STP

Across the AGs, most interviewees express little use of STP in classes or very surface-level incorporations of STP in classes. Interviewees expressed that STP covers most of what they have already been doing in the classrooms and thus acts as a useful overarching checklist for students. Some interviewees also articulated that the big ideas in STP are too generic to provide practical guidance for student teachers, and that student teachers rely more on their respective discipline-level guides (e.g. ACoLADE for ELL). Lastly, interviewees across all the AGs brought up was that STP could be seen as being overly didactic to student teachers who may resist adopting it.

Effective Pedagogy

Across AGs, there is a consensus that effective pedagogy is about respecting the learner, keeping the learner motivated and engaged and to teach what matters to them. Some interviewees also brought up authentic learning and inclusiveness as effective pedagogy. Both formal assignments and micro-teaching are commonly used to assess whether student teachers are applying pedagogy effectively. The main challenge that student teachers face in applying pedagogy effectively is their inexperience at handling the complex situations of the classroom and require more time and feedback in order to improve.

SECTION II. DISCIPLINARY PEDAGOGIES

2.1 NSSE: the dominance of the Inquiry Approach with variations

Three out of four interviewees from NSSE alluded to the inquiry approach as the primary pedagogy for teaching sciences.

“I thought that the theoretical basis of reflection is really a simple thinking skills of observe, generate and and relate. When you reflect, whatever form of reflection you have, the first thing you do is that you observe and then you generate and that's what I do in all my lessons in fact. In science, whether it is a conceptual development so I can teach first and ask the students to observe the concept and then they generate what they know. All the information and then just make sense of the information. Before you know they can actually link up everything and then get this concept that I was trying to tell them.” (NSSE-1)

“Of course, one of the hallmarks for science is, of course, teaching science through inquiry, through discovery. That I teach, and many of my colleagues also were teaching in some way or another. We are all very, very united in teaching science by inquiry. Of course, other than that, much of the pedagogies or teaching methods are actually quite generic, things like, collaborative or cooperative learning.” (NSSE-2)

“Typically, for science and this idea of experimentation is a key disciplinary pedagogy. I think it's something that- you have to be able to design investigations. Experimentation being one of the subsets of conducting investigation. I think getting students to always look at things and find out for yourself, designing effective investigations will be an important skill. So part therefore of the pedagogies that we'll typically use for science and technology subjects will be to find out, to investigate, to set it up so that you-- Again, I hesitate to call it a particular targeted or intentional difficulty” (NSSE-3)

Along with the inquiry approach, some interviewees also emphasize collaborative learning, student-centered learning and on the visualization of scientific concepts.

“Yes, you can call it stages if you like. Whatever you do-- Let's take for example you must know the needs. You must identify the needs. Students' needs, curriculum needs, even learning environment needs. Then you have to decide the expectations based on those needs. The holistic ones enough you point them to exercise some form of opportunity for them to succeed. I think that this identification is important just as under the planning part. Then after you implement the plan now that's where the managing they all come. This is where you don't do the stages. These are the formative assessment. If you look at it carefully it's just formative assessment. It's just managing students learning by monitoring the outcome of this learning of the students. When they go off track you have to bring them back then you have to make sure that their needs are met actually. With these four simple letters, acronyms” (NSSE-1)

“People from Slavin, and Johnson & Johnson, all these people, I think we utilize them to like, they're using Jigsaw, and smaller collaborative techniques. Fishbowl, three-step interview. All these simple methods, we will go through with them as well.” (NSSE-2)

““I think that the most important thing is to be able to visualize what the concepts mean or the chemists are trying to describe what happens. That's the key thing because if the students cannot see, then the only thing they do is to memorize it and it become a big waste of time. I'm sure you also memorize a lot of things, right?” (NSSE-4)

2.2 ELL: The notion of Connection central in responses with individual variations in pedagogies chosen

All three interviewees alluded to the goal of literature to build human connections to various extents. Each have unique ways of achieving this shared goal such as through dialogic interrogation, problem-posing, highlighting connections between texts and putting emphasis on the meta-functions of language.

“It's about questions and it's about dialogic momentum established by a constant spirit of questions. Questions that we would ask our students to guide their thinking, questions that they would ask now that they have engaged with the text more deeply and literature has to be open-ended because it cannot find a concrete answer. This is what students find frustrating sometimes because there's no definite answer. It's not like EL comprehension. It's not like math, where you find the formula and you get the answer. There is no formula in a sense to understanding literature. There is only a good way to engage with literature in a superficial way. The challenge of literature is, basically, to grapple with difficult human problems not to avoid them. The problem, I guess, in Singapore is that people tend to shy away from difficult human problems, especially, if they seem to be too political or too socially-sensitive and so they shy away from it. Literature is the perfect vehicle for confronting these difficult problems because it's a safe space to negotiate the problems they can face now or in the future. I guess like to kill a Mockingbird is okay because it's black people in another era, in another completely different part of the world. So it's only metaphorically related to Singapore. I don't think we would see anytime soon a novel about the race riots, for example, because it will be seen to be too close to home.” (ELL-1)

“The theories are actually basically, I would say there are two sets. One set's relating to the practice part. The how part. How hard do you carry on. I think that part may be probably they're quite similar in every subjects, probably. I think so because in other subjects I guess they're also getting them to construct their own understanding. The teacher may engage them in questioning, group work, discussion, that kind of thing. Maybe this is a generic across but the other set of theory relates to the content, the subject matter English. I think English has a lot got to do with-- maybe for simplicity. I'll just say how language works from using the three metafunction. I mean in the systemic function grammar I'm using to explain is

how language works using the ideational function, interpersonal function, and textual function.” (ELL-2)

“Key pedagogies that are unique to the literary discipline. I think an emphasis on the text is important. The fact that we use literature, we use books. That is I think something that is unique. I think we do have to teach our students to read the text. I think what's also interesting is that because literature is about the text but it's also about life and how they connect with each other. I think a lot of what we do in class is about getting students to see how they can connect and then to teach them how to find strategies to help their students make the connections. For example, I may have a poem, I may have a text. Let's give an example. Let's say, a lot of schools do *The Boy in the Striped Pajamas*, which is a set during World War II. That's a text. That's set in a particular context. How do I help them to make connections to other texts? For example, War poetry or more contemporary texts about conflict. How do I help them make connections to other things that are happening in the world right now? That is the text to war connection. How do I help them make connections with other people?” (ELL-3)

2.3 HSSE: Emphasis on Inquiry approaches

Similar to NSSE, the interviewees from HSSE share the emphasis on the use of inquiry approaches as the primary vehicle for teaching history and geography. The inquiry approach for HSSE has also been modified from the traditional scientific inquiry approach so as to facilitate the teaching and learning of humanities.

“You've got scientific inquiry. You've got historical inquiry. The processes are the same, it's just that the nature of the knowledge can be different or the source of knowledge. We're talking about scientific inquiry, what happens is that you can recreate the same kind of experiments and then coming out with the same kind of results... Our lab is basically the past and the past don't have things that can be confirmed or verified or whatever, so it's just remnants of that particular past. In a historical inquiry, we're also very clear that whatever answers that we develop out of the whole process tends to be tentative, tends to be provisional. It's based on our interpretation of the data. You can ask three or four different groups to investigate a particular thing in history and then they may come up with maybe three or four different interpretations which is fine.

What we want to focus on would be this idea that whatever conclusions that they develop must be substantiated with the use of evidence because that's how historians conduct their craft.” (HSSE-1)

“Partly because the ministry says so and partly because I think it's quite natural to geography, we actually focus on inquiry-based learning. That is our main pedagogy. We model most of the demonstrations around inquiry-based learning in the classroom and in the field... Yes. It's actually that model, but in Geography, it's been re-worked a little bit and so we call it the Geographical Inquiry Approach, after Margaret Roberts, but honestly, it's actually under Kolb's experiential.” (HSSE-2)

2.4 VPA: Design thinking

Both interviewees from VPA alluded to design-thinking in their pedagogies where the curriculum is designed with the end user, the students or the beneficiaries, in mind.

“I think we also-- The elements of design thinking within our curriculum because it's always with the end-user in mind. There's always that whole empathetic process to understanding what the user needs. Even in our modules for the NTU students, for example, one of the common assessments is for the students to design a drama workshop, but because they're not teachers so it wouldn't be for teaching purposes. It could be say, for example, use certain drama strategies of games in, say, your freshman orientation camps. Or if you were to do some kind of community program and you're running this program in an old people's home, what kind of game would be suitable? You also have to always bear in mind who your audience is, what is their need, and how will they receive such games? What are you trying to build in them? It's always very user-centric.” (VPA-1)

“Delcross is about using movement to understand music. It's a resonant study. We are looking at music, where it is not just about playing and listening to music, understanding the theory and history behind it, but also about how to move to music, and using movement to understand and internalize the feel of music. For example, dance. Dance, there's an innate rhythm behind your dance movements. To actually guide the students to move first, and then, through those movement, then, they actually understand, for example, rhythm in music. Then, there's also Kudai. Kudai is about using voice-- using voice as the main instrument to actually understand music. It's a very scaffolded a very—very spiral kind of curriculum. Then, there's also the off approach. Off approach, essentially, is more student-centered, and it's own song-based. The idea is to make music together as an own song, but to use all kinds of instruments. Then, the students have ownership of what they play, and then, ultimately, they will need to improvise music as an own song based on what they have learned. It's an improvisational-based kind of curriculum. Then, there's also musical futures that is based on the practice of popular musics. The approach is based on a study on how popular musicians learn and from the way they learn. The researcher, in this case, is Lucy Queen. She translated that into a pedagogy that's very popular now in many schools.” (VPA-2)

2.5 PESS: Making theory-practice connections

The emphasis in PESS lies in making theory-practice connections, rather than just focusing solely on practice.

“what more can we add to our students who didn't have the ability so they can stand in front of a school and teacher skills. We have to probably introduce maybe the idea of how to apply the theories into practice. That's one aspect. Also, there's the academics part of it how to apply the theories that we learned here into the practice in school. That's one. The other thing is not many people I teach in the context where you teach one person to 30, 40 kids. Class management in teaching a particular skill is very heavy

side of content. For example, if you want to teach one kid how to play badminton, you just take one shuttle, one racket. That's it." (PESS-1)

2.6 ALC: Authentic Learning as a common theme

A common type of pedagogy identified by the interviewees from ALC was authentic learning. In terms of assessment, this translates into communicative testing - where one would select authentic, real-world material for the setting of language tasks – and also experiential learning – where student teachers go on learning journeys to experience viscerally their teaching contents.

“For language assessment, I see the key theory is-- Because I emphasize a lot on communicative testing, communicative tests. I think the one scholar I have referred to quite often is Buckman. Because now, the whole language testing is actually basically not only English as a second language, but also Chinese as a second language or as an international language. They emphasize a lot on how you use language in your daily life. I think it's important to tell them how to select authentic material for setting of these language tasks.” (ALC-1)

“How do I teach assessment for learning? Is by-- taking one example. I love to do this, that is through the pedagogy of experiential learning. For instance, I take a novel, novel by our local writer, *Batas Langit* by Mohamed Latiff Mohamed. This story happens during Singapore 1950s, 1960s and the hero was a little boy, eight-year-old, nine-year-old Adi. Adi comes from a very poor family. They live in the area of Geylang, Aljunied area now, Lorong 20, Lorong 23. You're talking about Singapore in the '50s, in the '60s when we were very, very poor. I know that when we talk about experiential learning, you must be wondering, where can you find Singapore in that poverty state?” (ALC-2)

2.7 MME: Making Connections as the key pedagogy

The key pedagogy identified by the interviewee was the CPA approach (Concrete-pictorial-abstract) which he also termed as the relational approach as importance is placed on making connections between the levels of representations.

“I think for mathematics the key one will be the CPA approach because you hear this from time or almost everywhere. It's not just an introduction of concrete pictorial and extract presentations or mathematical ideas but also how to bring about the connections between them. Very often we will get them to see that it is not just presenting different representations but more importantly, the teachers need to highlight the connections between them. For example, when they do explanation of the multiplication algorithm, it's useless just to use the multiplicative and getting the students to do it and then thinking that they will see the connection... While the students are doing it, the teachers need to explicitly make the connection to let's say the abstract notations.” (MME-1)

SECTION III. VALUES AND PEDAGOGY

3.1. Care, empathy and respect are commonly emphasized amongst all AGs

Across AGs, interviewees emphasize on care, empathy and respect as the values that they find important to their teaching. Care refers to the concern that teachers show for their students' socio-emotional well-being beyond just academic performance. Empathy refers to understanding what students are going through. Lastly, respect refers to respect for students' opinions and to not put them down for their faulty reasoning.

"I don't explicitly talk about it but I just talk about the values of care and empathy and being a good teacher. I always tell them, I think they need to see themselves first as a teacher and second as a science teacher. Most of them wouldn't be FTs. You are charge of a 40 little kids, you got to take care of them as people, don't just see them as science. They are science students, but see them as young people who have all sorts of things. You need to see them as persons first." (NSSE-2)

"I suppose. I think to articulate again, something specific would be that teachers must care. Teachers must care for their students beyond scoring well. I think linking back to I say, do you remember the beginning of semester one, the first things I asked you is, "Who among you is a total waste of time?" Going back to school, you're going to learn the real practice of teaching. I say that in my own experience, in my own observation, not experience, on my own observation not to disparage many of these teachers who are perhaps very well meaning, but they are coming from a perspective of real practice of teaching, very often gets reduced down to, can we produce a better PSLE cohort. Teaching to the exam. Yes, I understand the pressures teachers undergo say for primary science. The parental pressure for the teachers is very high. You want your child to perform well so you lean on the teacher and say, "How come you're never giving her work? She's on enough practice." (NSSE-3)

"I think mutual respect is always important. We don't look down on students because of what they don't know. We should invite them into the conversation because of what they do know. Too much of our pedagogy, I feel is centered on focusing on student weaknesses and student efficiency so that we spend all our time in the classroom telling them how bad they are at doing this with or that. That just demoralizes and disconnects us. Increases disconnect with the subject rather than help them embrace the subject for what it can teach them and how it can build on their human understanding." (ELL-1)

"That is of empathy, it's just integral to literature. You can't teach literature without teaching empathy. Remember just now I talked about making connections to the world and making connections to other people. I think in the future that's what you try to do. Perhaps one of the things to think about also is how much connection we make?" (ELL-3)

"The third kind of respect I guess would be in terms of respecting every single group or student's perspective or position on things. We're not trying to say who's right who's wrong. We want to see value in whatever conclusions, observations,

interpretations that every single student wants to put forward. If you look at the constructivist's idea, they are entitled to develop whatever reasoning capacities that lead to the conclusions and observations. I guess the final thing would be this idea that respecting your students for what they can do. A lot of our teachers tend to have very deficient views about students' ability. My research I've found that out of the 50 teachers who responded, 92% saw students' ideas in defective or deficient terms." (HSSE-1)

"I think empathy. Empathy is very important, empathy for the students that we're teaching. Otherwise, then it's really meaningless. I think passion for teaching is important, but passion has its limitations because if you're very passionate but you don't actually understand why you're doing it or you become too idealistic about it, then sometimes we're not doing what we want to do. The understanding of the field, the desire to understand actually what our students are going through is actually to me very important. The other value that I think is valuable. Our behavior, and not so much value but behavior that's very important is to be reflective in the classroom. That if teachers don't reflect, then we will constantly be doing the same thing without knowing what impact we're making." (VPA-1)

"Basically, safety. Mostly, the care for equipments, the care for where there's an opponent or a bystander or something else like this actually. In sports, we have this. Sometimes we call it sportsmanship. We have certain values like that in that sense so we can inculcate this particular values. For example, if somebody you see is playing in the court, you don't walk behind the court because it's actually-- Just in case. If that person is moving backward, he doesn't know you're behind. We have certain particular etiquettes I call it, which actually inculcate values in that sense not just in badminton but, in fact, all our sports in that sense." (PESS-1)

"I think education is important that we not only teach knowledge but also to help to-- In Chinese we actually emphasize on educating a human with a-- For me, I actually emphasize a lot on discipline. Personal discipline. You must be considerate enough not to attack peoples around you. As I told you, I taught in school for 15 years. Out of the 15 years, five years I was a discipline master. I emphasize a lot on respect of people, respect for country, respect for nature. I think that's important. I always tell my students in the past, I say, "You might not be as smart as the other students but in terms of morally, you're actually equal. You're equal." (ALC-1)

"Yes, how if you don't go through it. Of course, I don't expect you to go through the real life of prostitution, but at least have you googled? Have you tried google and have you seen the YouTube, at least see how it is, even how bad it is, how ugly it is? You have to know a bit about it, because I don't want you to go into the literature class and condemn people. That's not my teaching. I said maybe that's what their key objective is, that is to become a teacher with strong conviction that they can not only disseminate knowledge and skills but also empathy. That's when we can talk about holistic education." (ALC-2)

“Also when a student don't give you the answer, we need to show a little respect to the students by trying to understand what the student is thinking so that you know what to do to kind of support the student. I think by positioning teaching as relational and thinking, teaching in terms of managing and designing interactions that helps the student to see teaching not as just transference but to see teaching as more interaction. I think that is a important value because now when you see teaching as interaction now then each student becomes important. Then what stays after the school life is not about the content that you memorize. Oh, I remember this teacher as someone who is caring. How do you show that you're caring? Why teachers are caring? Because they see teaching as relational. I think that's one important value and that's the one that I kind of want to emphasize on.” (MME-1)

Some of the other values that were brought up by interviewees were awareness, capacity to reflect, teacher identity, respect for nature and knowledge and respect for diversity.

“I don't teach values. I don't think I will dare to teach any values because firstly I'm a science person. I'm not a humanist person but then personally I can teach values. Of course, there are certain generic values that can be taught. I mean as parents and teachers who teach honesty but then up to a certain point especially when a child grows up I think there's no way you can teach them. We have to make them be aware. I don't teach. I only make them to be aware... The moment they are aware then I think hopefully the environment they're in will make them more grounded in the value. If they're not aware, then even if they're in a very good environment, I think there's no catch for them. They'll just drift away somewhere. They'll miss opportunity for them... Awareness is something which I thought is very important. Then awareness can be developed through a habit of learning. A habit of learning which means that the students are consistently being exposed to this kind of teaching and learning. Everything I teach there's also a connection to something.” (NSSE-1)

““Okay. I guess that one value that I can think of that somehow rather cuts across different ways would be this idea of respect. Respect for knowledge and the nature of the historical discipline. If you respect the knowledge that history has to offer, it is not this thing that we call fixed or certaintist knowledge. It's provisional, it's tentative, it's open to revisions and stuff like that. If you are able to understand that the nature of knowledge is such that it's never fixed, it's never set in stone, then you recognize that we always have different ways of trying to interpret the past. Then, of course, this comes in the respect of the discipline. It's the nature of the discipline to create knowledge in that manner. I guess the next thing would be respect for the conclusions and interpretations that your colleagues come up with. You're likely going to come up with different positions which is fine but the most important thing is to see the validity or the credibility of each position and that you're able to put forward the kind of arguments.” (HSSE-1)

“The other value that I think is valuable. Our behavior, and not so much value but behavior that's very important is to be reflective in the classroom. That if teachers don't reflect, then we will constantly be doing the same thing without knowing what impact we're making.” (VPA-1)

“I think I will use this model, looking at the four areas. Number one is, what are my student-teachers' inclinations and disposition? What are their strengths and weaknesses in terms of their teaching, right? When I teach, I will try to address that. Number two is the students that are going to teach in the future, what their learning needs? Student-centeredness lies, actually, in their perspective. What are their learning means, and what do they like, and what do they want to learn? Then, number three is about content knowledge, in other words what is considered legitimate content in our current Asian time, that we need to impart to the students. Number four is the social-cultural situation right now. In other words, that something that the curriculum that they teach must also address the societal needs. In other words, whether it address certain cultural understanding that they need to actually gain before they leave school or whether certain nationalistic norms, whether there's our mobility, if they progress above-- We know when they move on in their music learning. I guess, when looking at how I teach, probably, I'll be looking at these four factors and how to balance between the four.” (VPA-2)

“I think education is important that we not only teach knowledge but also to help to - In Chinese we actually emphasize on educating a human with a-- For me, I actually emphasize a lot on discipline. Personal discipline. You must be considerate enough not to attack peoples around you. As I told you, I taught in school for 15 years. Out of the 15 years, five years I was a discipline master. I emphasize a lot on respect of people, respect for country, respect for nature. I think that's important. I always tell my students in the past, I say, "You might not be as smart as the other students but in terms of morally, you're actually equal. You're equal.” (ALC-1)

3.2. Translating values into teaching:

A few key trends emerged from analyzing the interviewees' responses: NSSE, ELL and ALC interviewees all converge towards using role modelling to translate values into teaching. ELL interviewees also tend towards using dialogue to facilitate value-teaching.

“I really try to model, either I tell them that for example, in the context of formative assessment, I tell them that we try to make sure that your classroom accepts errors... Once you accept errors then we can learn. Don't go and say stupid, you do that enough, nobody there raise their hand.” (NSSE-2)

“Okay. In the sense, for me, one of the most important ways is that-- I'm also a role model for them. The most important thing is that I'm always early for class so that if they are late, I can scold them. Not only that, because for over the years of teaching, I find that there's a little bit of correlation between people coming late and people who get into trouble during their teaching practicum.” (NSSE-4)

“Simply by this extensional literary conversation about these texts and doing drama work with these texts. Students start to understand that they have to understand the world from more than one perspective. Some characters that cannot appear unreasonable, can have a very human dimension that allows us to understand their actions in a more empathetic way. That, I feel is being quite valuable about doing text that can allow students to inhabit the characters a bit more.” (ELL-1)

“I answered that, right? About conversations and dialogue, that's important. I think it's important to demonstrate what you teach in the sense that if you say this is important, then you should be doing it in the classroom. As I mentioned just now I think it's important to provide opportunities to learn, so mentoring is a big part. I feel of what I do try to think about what resources I can provide to students.” (ELL-2)

“I think the best way is to show yourself. To, I mean, in Chinese you call it Shen jiao. It means you show by example. I think my students respect me a lot because of that and I always share experience with them when in school, how I deal with students. I think that's the best way to transmit the common values to the students.” (ALC-1)

An interesting approach was also brought up by one of the NSSE interviewees on the innovative use of “Reverse-Analogies” to teach values.

“From the concept then the teacher can bring out the values so I give example. The examples I teach here, some of these are school examples. These are schools. This is from the schools. This is from my teaching experience and this is from the teacher who made the plan. For example, let's say this tree. The tree roots, Biology you talk of roots as anchoring trees and the stronger the roots the more branch it is, the more stable it is. This is actually a good analogy. A reverse analogy in fact. They tell the students about relationship. That's right. If you cut off your relationship, if you cut off the roots of the tree, then the tree will not stand in the crisis. The crisis can be a storm.” (NSSE-1)

Another approach to teaching values was the use of experiential learning such that the student teachers themselves develop their own capacity for empathy before translating that to their teaching.

“This is the worksheet that I provide to them. I asked them they are many routes because Adi had to look for his lost father, Adi has to look for his lost sister twice. I said which one? From Lorong 25 to Lorong 23 and then we go to so many lorongs. Then this one is the reflection. The first reflection is about their feelings as Adi, now how they feel. The second one is, “What do you seen of the strategy of experiential learning? If you were to teach this novel to your students, do you think is a good strategy? There are two levels. One is about how they go through as Adi as a character in order to empathize with Adi and his problems. The second reflection is, “After having gone through such pedagogy now, what you've feel of such a pedagogy? Does it make you a better teacher or how?” Of course, before that, I have to teach them what is experiential learning, what is authentic learning, so on and so forth.” (ALC-2)

SECTION IV. INNOVATIVE PEDAGOGIES

4.1. A few key trends emerge across the AGs which are the use of Modelling, Reflective Learning and Collaborative Learning.

Firstly, modelling is used in ELL, VPA, HSSE and MME, where interviewees model demonstrations of what goes on in a classroom and allow the student teachers to experience the lesson through the lens of a student.

“That means what I teach, I demonstrate to them how I would teach when I am in the classroom, so I teach like a secondary school teacher. I don't teach them like NIE tutor. For example, I'm teaching writing, for example, right? Of course, I leave them to read the theories because that's their job. The content part, but I teach writing. For example, I'm using let's say the process writing. I treat them as my secondary three students, secondary four students, secondary one students, and I will carry out the teaching with all your worksheets, et cetera, for this particular class of students and I carry out the teaching and then just show them how I would teach... After that then they have to link that to the theory. To the theory, to their reading, to what's in the syllabus. After that, they must be able to tell me, for example, if asked them to look at what's in the equally teaching processes in the syllabus? They must be able to recall and know the lesson that I demonstrated and then segment it into, "Okay, what do you see? This is this, am I doing the raising awareness part of the ACoLADe? Which part did I do explicit teaching? Which part do I do guiding discovery when I demo just now?" Then they have to talk about, of course, the theory related to the skills.” (ELL-2)

“Yes. Say, for example, often we problematize a particular topic. Since you've mentioned the idea of like who was Singapore's real founder? We put forward that particular idea, who was Singapore's real founder and then after that, we somehow rather engage them in a discussion of what are some ways to unpack the particular question. Then we offer multiple sources. The sources would have to somehow rather be arranged in terms of their position, in terms of their perspective and then we analyze each of those sources.

In terms of where, what their standpoints are, in terms of what their viewpoints, the sort of claims that they're making in terms of interpretations that exist and stuff like that. Then based on that, we get them to sit in their groups and formulate different positions after they've examined the evidence. At the end of the session, we get them to present the findings. We try to model that sort of approach in certain classroom environments and then telling them that this sort of methodology would have to be adapted in the context of you running that sort of approach with your students.

The modeling of that inquiry approach would be one of the things that we do fairly regularly in our classrooms.” (HSSE-1)

“Partly because the ministry says so and partly because I think it's quite natural to geography, we actually focus on inquiry-based learning. That is our main pedagogy. We model most of the demonstrations around inquiry-based learning in the classroom and in the field... For geography, let's say for a classroom lesson where we want our students to teach about plate tectonics and where different types of landforms are found in the world, like why are volcanoes here and all that? Instead of just saying, "Okay, this a world map, here are the plate boundaries, volcanoes are only found on this type of boundaries." (HSSE-2)

“Yes, a lot of enactment. I'm not sure whether this is innovative in the traditional sense because this is what happens in any drama classroom. It's a whole experiential design of the course, where the students don't just learn how to implement or execute or facilitate the drama techniques or the drama conventions and games or whatever. It's very important that they are first and foremost participants. Let me stress this a lot. The students have to experience the process as a student before they can look at the curriculum and teach it as a teacher. If you've never experienced that as a student, you actually don't know what's the impact of such activities and how they actually feel the same literacies, how they actually encourage students to behave in a particular way and all that.” (VPA-1)

“Actually, the last part of our introductory courses revolves around modeling what we learn by CPA. We will still treat them as students and then run them through some of the activities that we work with actual students. That's one aspect of it because students have also opportunities to try and explain the concept or teach their fellow students, what I sometimes do is I video them.” (MME-1)

Secondly, Reflective Learning was also a common theme across AGs which places emphasis on student teachers being reflective practitioners.

“Reflective learning is my PhD topic. Just a theoretical part of my PhD. The practical part is actually my science practical examination. In very simple structure, I'm interested in a student in school who is more inclined to reflect as a habit, will they be able to set up a experiment? Just set up more appropriately. These people I've been trying to look at in my PhD research which I think was seven years back. Actually now today I'm still working on it. I think there was nothing new that I found. All I did was I looked at all the literature and I thought that the theoretical basis of reflection is really a simple thinking skills of observe, generate and and relate. When you reflect, whatever form of reflection you have, the first thing you do is that you observe and then you generate and that's what I do in all my lessons in fact. In science, whether it is a conceptual development so I can teach first and ask the students to observe the concept and then they generate what they know. All the information and then just make sense of the information. Before you know they can actually link up everything and then get this concept that I was trying to tell them.” (NSSE-1)

“That's one page. It's just to get them into the more of being a reflective practitioner. Not so much of giving them a protocol or to reflect on but vis a vis just on a very basic level looking at their own teaching. Quite often when they look at their own videos, they have a lot of comments about the-... Which then I think raises awareness of the importance of maybe the use of language, the use of gestures and how do you write on a white wall. All these things get shown in the video” (MME-1)

“I think maybe rather than quite innovative, I would say that one of the consistent emphasis in my class is the link between theory and practice. There's always an emphasis on, what is the theory behind this? Then in practice, how do we actually enact it? We may be reading certain articles on discussion and then we will have a heads on activity where they get to do the discussion activity and then think about whether it would work or not. How do you vary it? I suppose if you want to call it innovative, you can say that's the theory-practice nexus. This is linked to our authentic assessment. I think one of the things we really want to do is to ask the students, “Will you actually use this in your classroom?” Then if you do, what are the things you can do? Something that's innovative and so far as—” (ELL-3)

Thirdly, Collaborative Learning was also commonly used across AGs where student teachers work in groups to understand course material.

“Normally, what I do is, I use Blackboard a lot because at the start or normally about two weeks before the course begin, I will upload materials onto the Blackboard. I will provide detailed lecture notes with normally two reading materials per topic for them for pre-reading and during the lectures, because normally we have lectures and followed by tutorials. Lectures, I will concentrate on-- I will not go through the notes but I will throw them some questions, ask them to apply what they have learned through the lecture notes and then to see how they response. Then for the tutorial, normally it's a group task initial task. What I do is for tutorials, normally at the beginning, it's a discussion in class, group discussion, but the later part of the course like from six weeks onwards, I will assign them with group tasks which they need to complete before they go for the tutorials. During the tutorials, they do a presentation and do the verbal feedback.” (ALC-1)

“Okay. I really don't know- innovative or not, but some of the things that beyond didactic, beyond chocolate top kind of things would be, just randomly, off the top of my head-- Say, in trying to elicit responses, I like to use a collaborative document creation using Google docs, things like that. I use that a fair amount. I get-- Even just throwing out ideas, I just create a nearly blank Google doc and then I get all the students either onto the link or I shared the document with them, and I get them to write down responses, even get student- teachers to curate responses while doing that. Even just a plain white piece of e-paper as it were, and they write these things down. And then of course, I tell them to save that document eventually, download it and save it, because that's the combined responses.” (NSSE-3)

SECTION V. BENEFITS AND CHALLENGES OF USING STP

5.1. The Limited Use of STP in classes

Across the AGs, most interviewees express little use of STP in classes or surface-level incorporations of STP in classes.

“I think I didn't really use anything. To be honest, I read it. I know, I even presented this as part of my own presentation in my training courses. To say I couldn't use that in my micro-teaching and things before this, I just mentioned. The reason why I [crosstalk]... I might have shown it but I don't think I showed it and start teaching STPs. One other thing that I realized about younger teachers is that or, in fact, people who are not younger teachers. I'll just say, people are more open to new things and me inclusive although I am not young now. I don't like to be told what to do. Don't give me something.” (NSSE-1)

“I've mentioned it because when I do my teaching, I have to remind them of the teaching actions but that's about it. I didn't think I've really talked about it in a very large sense.” (NSSE-2)

“I don't use it explicitly. I don't say, “this is where it links to Singapore Teaching Practice.” To be honest, the way I would usually cover such things is, you have learned this elsewhere in NIE, right?” (NSSE-3)

“The thing is that when I look at the Singapore Teaching Practices, it is very general. A lot of things that we do, I think it can be connected to the teaching practice. For that reason, I don't really flag it out in my class to say that, “Yes, I'm using STP.” Rather, I don't find necessary to do so. If I were to ever mention it, I normally would say that “Look, this is actually part of the STP,” but not in a way that is introduced in a formal way. I think the introduction of STP to our students, teachers here is I think from students' feedback is that they were already introduced prior to coming to NIE so they have a large dose of that... This is my students' feedback. To them, they have already a huge dosage of the STP.” (ELL-2)

“I'm aware of STP and I use STP insofar as I check that whatever I teaching is aligned to with, but in terms of the precise language of the STP, I think a lot of it is encapsulated by the theories we looked at... That's a tough one because in reality, I don't really refer specifically to it. I have looked at it to see that there's an emphasis on say, certain aspects of classroom teaching. I just refer to it, that's all. The honest truth is I haven't referred to it recently, so I can't tell you what I have found useful.” (ELL-3)

“Yes, okay. If you want me to use STP, I'll use STP law, it's no big deal. I throw out one slide, put in another slide align what I do to the STP, I just have a nice Orchid there. I think that what do I think of STP? I think it's good because I think that it does capture some of the key things in education and that it hasn't thrown me in a loop.

In that sense, it's okay, no problems. Do I use it? Well, since it's there, I have to use it. I use it in my classes to structure like, "Okay, this is where we are, and this course covers this part of STP." Then when we do the pedagogy base and we talk about microteaching, then I show them the ATP form and I say, "You know what? This is all the STP thing. There's nothing new, no need to worry." (HSSE-2)

"Not explicitly. I came into this only for recently this year as well. When did it start? I wasn't even aware when it was first initiated." (VPA-2)

5.2. STP is useful as a general guide or framework but is also limited by its being generic

Across AGs, interviewees have expressed that STP covers most of what they have already been doing in the classrooms and acts as a useful overarching checklist for students.

"A framework that is visible concrete enough. Now I know where to hang my stuff. I'm doing it too, now I see the framework hanging there. If I can start hanging and then I can start seeing that places, where I hang, are days where I think the STP comes in." (NSSE-1)

"STP I see it as just like checkpoints. You can say it's a framework, in a sense that it helps you in the pre-lesson planning. It specifies something for doing lessons and it also specifies something for assessment as well. I don't know, I think it's something out there lah but I think it has to be concrete ties which I think it's not, so I don't know." (NSSE-2)

"I think there is. It's there. It's there. It's just that if you tick everything up, I'll be a bit worried. I think it has to be about-- My fear is that the idea is that you've got to hit as many of these teaching areas as possible to be good. It's also like the way our ATP form is: the more plusses you have, the better...: I don't think there's anything wrong with STP per se, it's just that we need to be very skillful in the way that we use STP as well as the way in which we use our APT forms. I guess it's like, is everybody cognizant of this and is everybody using it very mindfully, purposefully or are we going through it in a very--?" (HSSE-2)

"In terms of the limitation, okay. In terms of the strength, also, is that, really, this can be used as a checklist. When the student-teachers plan their lesson plans, they can refer to this and see what are the areas they might want to focus on. I think that it is quite impossible for every single lesson plan to really look at every single **area**. It's overwhelming. In terms of using this **STP** as a general guide, I think it is helpful. Its strength is also a limitation, because it is too generic." (VPA-2)

"I think the challenges come about when you see them as a collection of things to do. There are so many terms inside. I think they won't be pedagogical experts. It's going to be very tough to know every single one of them... We don't even go to that number very often. I think that's one of the challenges. I just use the four big areas to frame everything. I say if you just think by the four areas, naturally, you'll pick up some of the actions within each of the four areas." (MME-1)

However, they also articulate that the big ideas in STP are too generic to provide practical guidance for student teachers, and that student teachers rely more on their respective discipline-level guides (e.g. ACoLADE for ELL). Another concern that interviewees across all the AGs brought up was that STP could be seen as being overly didactic to student teachers who may resist adopting it.

“I think at the end of the day, simple teachers are very pragmatic and practical in their approach So the first thing that they would want is, how do we teach the discipline? They don't want generic big-picture ideas, because once you get it, you get it but you want to see how it might work on the ground. To keep emphasizing on big pictures is not very useful because as the programs in the PG or whatever delves deeper into what they have to do in the classroom, what they want is explicit guidance for classroom practice. They don't want the big-picture philosophies. Because philosophy is something very personal and it has to be embraced on a personal level, otherwise, it won't resonate.” (ELL-1)

“I feel that if it's too general then to me, it raises more questions by the students... Students ask. What is understanding students? What do you mean by understanding subject matter? Also, I find that if it's too general, then I think it raises more questions but I think if I mentioned ACoLADE just now. Besides the ACoLADE, there's another one called the language teaching principles called CLLIPS.” (ELL-2)

“Then, might it be very forced to-- For example, when you want to really have this pedagogy, these four pedagogies, and now, you want us to align these four pedagogies to all these things. They are just right. It's kind of quite overwhelming, and I do not know whether that really helps, in a sense that-- They really have those four pedagogies to really help them. Then, now, you have this overarching kind of swiss roll to impose on. Of course, I'm not saying that this doesn't work, but it really depends on how you want to use it and how prescriptive to live, because if you are too prescriptive, I think it's going to be counterproductive, in the sense.” (VPA-2)

SECTION VI. THEORY-PRACTICE CONNECTIONS

6.1 Varied approaches to integrating theory with practice and helping student teachers to make these connections

Various approaches surfaced from interviewees' responses. The key trends that emerged were: 1. to equip students with critical learning strategies and reflective thinking to make the links between theory and practice themselves; 2. to incorporate the reflection of theory-practice links into classroom assignments and group presentations.

"Yes. I don't make the connection for them, but I provide them the tools to make connections if they come across... Critical thinking, creative learning all these are tools... I could see and I could toggle between, I see adult learners learning, I realized that actually they'll see the connections themselves without you trying to tell them because they've got experience in life." (NSSE-1)

"In a way as I teach, maybe I'm not so good here, actually I expect the student teacher to make their links. Sometimes I'm not very direct. Many of the examples I give are often times generic examples, because I think that whenever I find a good example I'll bring it in so whether it's in social studies or English or something, I'll just bring it in because I think it's a good example, I don't confine myself to science-y things... Real world examples of a pedagogy or a pedagogical technique..." (NSSE-2)

"Okay first, of course, all our assignments need the students to do that... For example, the students for the assignments they need to submit lesson plans. The lesson plan we have a column for rationale a rationale column. For the rationale column, they need to draw in the theories... They need to put in the case so, for example, in let's say- sorry. Maybe I just give you a short description of the lesson plan. We have three columns, first column is, of course, the duration for each segment not of the lesson. Second column is the procedure you do this next step. The other one is the rationale column. The rationale column actually requires them to say if this part of the lesson here you introduce this activity. What's the reason? What's the theory behind it? For example, just to be concrete. If, for example, if they use DRTASA teaching methodology in their reading lessons in a particular part of the lesson plan, then they will in their rationale column they have to say. The TRTA, yes, it is teaching but what is the theory underpinning it?" (ELL-2)

"For example, just on the topic of discussion, again, with my BA class, I could do a fishbowl activity. Which is to have some students discuss in a circle and other students sit outside and actually to make notes about the discussion and talk about what went on. Then again, that produces an artifact in an experience within class from which they can then discuss their application of pedagogy." (ELL-3)

"Then we've got six sessions where they have to run one hour seminars for us... Those seminars are based on readings by history educators and learning science... It's a two part thing. The first thing is to explain to us what the heck those two things are about so the theory of it. The second part of it, now run an activity where you

apply those theories in the classroom format. We do that for concept... The thing is you've got scholars writing about specific historical concepts. Let's say I give them maybe about three readings and then after that, the readings will be about how causation has been thought out by philosophers of history and by historians and history educators. Their job is to essentially convert them into bite-sized information I guess and then to show how it could be done in practice. There's a lot of guidance. I mean to say that, they're not left alone. Once they have done their readings they come to me and after that we discuss in terms of how they can run it in the classroom." (HSSE-1)

"Usually, we go through the theory first. We study what the scholars in the field have said about this then in practice, we actually see how it works. Then we help the students to gel the two. In theory, this is what they said. For example, drama encourages oral literacy, for example, in primary school. Then the next thing that the students will do is that they'll actually go through a workshop that shows how drama encourages oral literacy." (VPA-1)

", I always encourage my students to observe other teachers to do. We are also big in connecting with schools so that schools give us opportunity to observe how they teach. I will also bring them to schools, and when they go to school-- and I'm very fortunate because our teachers are very good. They know that by them being observed definitely, our students will critique them, good or bad, they're teaching. They said it's okay because they know that that strategy will have developed our teachers. I can also show you the pictures, they observe how teachers teach, and at the same time, at the end of the whole thing, we do our reflection. I say, "That teacher is using what theory?" Then they will say, "This teacher is using this kind of theory." If they're not sure, usually, they will ask the teacher, "Teacher, what theory are you using?" Then I say, "What are the goods and what are the weaknesses of this teaching method?" You notice its impact on the students because whether good or bad, the litmus paper, the litmus test is on the students, whether they learn or not, whether they enjoy learning or not." (ALC-2)

6.2 Challenges of helping student teachers make theory-practice links

Across the AGs, the most common challenge faced by teacher educators in helping the student teachers make theory-practice links is the lack of motivation on the part of the student teachers. This is mainly because they are more concerned with the practical aspects of teaching and teaching for examinations.

"I suppose the challenge is that sometimes they are not used to-- They sometimes focus more on teaching students to do well in exams rather than teaching for understanding. There's this impediment of time and they say that sometimes if you focus on understanding, then it takes up time and there's no time for teaching or understanding in class in that sense..." (NSSE-4)

“They are just interested in the teaching part... I guess it's an issue that I faced when I came back after the PhD. I came back and then after the PhD, you're always thinking theory is the most important. You can't do anything without theory. Then you go the classroom and students will be like, "I don't need the theories. I'm not going to teach the students the theories. Just tell me what are the teaching strategy can be used." Over time, I became less disappointed in terms of that sort of idea... We focus on teaching strategies first. Then the readings and the sharings and stuff like that, we provide them with the connection, the basis with the connection with the links. We try to do that as best as we can without showing students that our lessons are purely theory-based. They must see some practical value. They must see some familiarity with what's happening in schools. They must be shown some kind of awareness that whatever things that people are doing in the classrooms are driven by certain theoretical considerations.

It's just that some people tend to acquire bad habits. When they acquire bad habits, they move away or deviate from what the theory is trying to tell them to do. These are subtle things that we're trying to do.” (HSSE-1)

“For students in NIE, it's not difficult to convince them theory is important. It's only when they go to school where I would say-- I don't know to put it. Because their focus is different. You know what I mean? Their focus is different. They are more result-oriented. They want instant results. What they practice in school, normally, when they come back from practicum, they will feedback to me, they say something about what their CT or even their HOD told them which contradicts what we told them in NIE... Uh, for, actually for higher degree... There are two courses that I teach. For MATSR, normally they are considered as ITP to me because most of them are not language teachers... For MED, yes. Some of them are even they have probably more than 20 years of teaching experience. It's hard to convince them sometimes because they have been in school for so long and they're quite you know, uh, but if you manage to convince one or two of them, I think it's a satisfaction.” (ALC-1)

Another fairly common challenge that student teachers face in making theory-practice links is that the theoretical research that they encounter is often based in a Western context and are thus hard to reconcile with practice in a local Singaporean context.

“Yes. They may not see it practical. They always see as something that's extra but when-- I think when the students see that the errors that are made by students in other countries are similar to that made by Singapore students, then they realize that there is something universal with them. One of the famous quotes we always use Ausubel's idea that okay, there is only one principle in educational psychology. He said, "Ascertain what the student know and teach him accordingly." (MME-1)

“I think the biggest challenge for us doing drama education is that the theories are all very Western. Drama education in Singapore hasn't-- I think in the last 10 years it has picked up quite significantly. It has gained traction, but the problem is that there isn't enough research for us to do that kind of link for our own students. Whatever

theories that we borrow is always a very Western angle and that their children are raised quite differently.

They have different literacy skills, even physical literacy. What we like very strongly, they're actually very confident already. When our students look at the theory and then they look at the implementation, they see a gap. They don't understand why it is so successful for them but it doesn't work. Then in our school contexts also, like many of the studies are done, say in Australia, New Zealand in the UK, and drama is actually built within the curriculum. Just like play is built within the curriculum, but for us, it's not." (VPA-1)

"Yes. I think especially for students with-- I guess the thing is, many of them come from a Western classical background, right? They are after the ABRSM and all that. Because of that, you know how the teachers tend to teach the way they were taught? When they go through all this piano playing, ABRSM, and all that, they think that that's the way to learn. Then, they try to translate that kind of teaching and learning format into a classroom of 40, with very diverse students and all that. I think the difficulty is because they have to move away from their impression of what music teaching or learning is, and try to understand what we are trying to teach, and the practicalities involved in all that. Essentially, they don't have sufficient experience in the actual classroom to really make sense of the theory. I think that the gap is there, because of this disjunction between the two." (VPA-2)

SECTION VII. EFFECTIVE PEDAGOGY

7.1 Consensus in what constitutes effective pedagogy

Across AGs, there is a consensus that effective pedagogy is about respecting the learner, keeping the learner motivated and engaged and to teach what matters to them.

“Yes, I think it's very important that the pedagogies should come across as more for the students, not so much for me. I say that for the students themselves, I mean you are going to teach your own students. Don't teach a good lesson just to impress me. Impress your students. The students actually agree. At the same time, the teacher also needs to clarify to these learners exactly what they need to be able to do. The pedagogies should allow for that thing.” (NSSE-1)

“By extension, actually, I always say that my primary motivation to do what I do is because you are not my constituent. The people I'm most concerned about are your students. If the school students are not learning anything, it's by extension my fault because you haven't picked up the skills, you haven't learned what you're supposed to be learning. You are not applying what you're supposed to do. In a very real way, I've not motivated you in the appropriate way to be a motivated teacher.” (NSSE-3)

“Effective pedagogy has to basically respect the learner, what the learner stands to gain from learning whatever you want to teach them. It's really not about what the teacher would want to inform the students. Sometimes teachers are too quick to kind of deliver lecture style. All the information that they think that the students should have in their heads but that's not pedagogy. That's just lectures. Just, basically, showcasing your knowledge or just covering what you feel that students should pay attention to. It's not about empowering the students to actively engage with the text or with the knowledge in question. It's not telling them why it should be important for them to understand this text on their own terms. Why this text serves them in the "Here and now." Not for some exam down the road, not for a test, it's two weeks away but why there's value in gaining that right now in the classroom together with the classmates.” (ELL-1)

“What would be effective pedagogy? Well, effective pedagogy is when students learn things that matter to them and that doesn't necessarily mean you have to teach. I think when we talk about the concept of teaching, we assume that we must be out there doing a lot of talking.

Sometimes teaching is about shaping the environment, making sure they're in a space, making sure they have the technology, making sure they have the text, making sure that you drop a curriculum that allows them to explore the issue in some depth. I think effective pedagogy happens when students learn and you go about creating an environment for students to learn. It may involve a great amount of teaching.” (ELL-3)

“I guess the effective pedagogy idea when it comes to what I do in the classroom, it is better my students are engaged. When I ask them to do certain things, the processes are followed properly. When we talk about inquiry, there are four stages. Are all these stages followed?”

Whether there are visible or tangible learning outcomes at the end of the lesson. We do a bit of review and consolidation. Whether or not at the end of the lesson, both of us, the teacher and the students have felt that it was a good session I guess.” (HSSE-1)

“I think for pedagogy to be effective, you really have to do at least two things. One is, as the saying goes, know where the students are. Ascertain what the students know and then teach them accordingly. I think, at least for me, I see effective pedagogy as whatever you do to find what the students know, then find out what the students don't know and then thinking of ways to bridge the gap. I think as far as the teachers can start thinking about that, it is effective.” (MME-1)

Some interviewees also brought up authentic learning and inclusiveness as effective pedagogy.

“Okay. For me, I think probably three areas: authenticity, alignment between objectives, strategies and evaluation, and the last one will be inclusiveness. Authenticity is that the pedagogy should align with real-world musical practices. I think if a teacher can actually impart that for popular music, the way that the popular musicians learn outside, we bring that kind of learning into the classroom. If the teacher can deliver that kind of authentic learning, then that is the effective pedagogy. Really, we are trying to link them to how this musical practice they teach in the classroom is relevant in the real world, so they understand the real world. They can actually understand what is music in their daily living. Therefore, that is definitely one criteria. Number two is about alignment between objectives, activities, and evaluation to make sure that the pedagogy, whatever they do and they teach, they fulfill the overarching learning outcome that they're trying to achieve in the first place.” (VPA-2)

“For me, it will be about, first of all, are your learning objectives worthwhile? Of course, what is in the curriculum, you need to cover the curriculum, but it is about, are these very good geographical learning objectives. Are you teaching good Geography? Second, is this a good Geography lesson, as in--? For me, a good Geography lesson will be centered around geographical understandings and concepts that in the process of teaching this lesson, your students are actually also learning something about the way that geographers see the world. That would be one. Second, is there a good geographical data? To me, if you have a Geography lesson and your Geography lesson is contextless, it's a problem. If you want your students to learn using inquiry but you don't give them data to make sense of the world, it's a problem. We can't keep taking our students out to the world, but we need to bring the world to our students, and we do that using authentic data.” (HSSE-2)

7.2 Assessing whether student teachers are applying pedagogy effectively

Across AGs, both formal assignments and micro-teaching are commonly used to assess whether student teachers are applying pedagogy effectively.

“I have one assessment from the assignment. I see the assignment and normally most of us I think we do that. They just target this concept, I think these are the aids in course. I think we've put it even in our schedule. Some of the outcomes that we put in our past paper, we put it there also. At least they know that, well these are the ones that you're supposed to do. To really test them, I mean it's not like exam.” (NSSE-1)

“One of the things of course, if you are teaching the micro-teaching then, okay, we can see how they teach and whether they can explain their concepts well. I make a big deal about explanatory prowess. Whether the concepts are conveyed and explained in an easy-to-understand manner.” (NSSE-2)

“One good way to see how they're applying this knowledge is to watch them in action and micro-teaching. Even though micro-teaching is a very short, simulated exercise in teaching, you can learn a lot about how they approach their subject just by observing them in this short segment of teaching.” (ELL-1)

“It's on paper form is that we look at assignment and look at the rationale, how they explain it, how they present the lesson plan to us it will show us. It will give us some indication of whether they have understood it because if they say that they claim to use a particular theory, let's say the genre approach and then when they explain the rationale it doesn't come out the way you know...” (ELL-2)

“That one is very difficult, isn't it? What we can do on our end is essentially to offer them those learning assignments that is driven by, what do you call it? Their thinking, their design when it comes to how they might operationalize that particular pedagogy. It's more hypothetical because it's couched in terms of an assignment, in terms of a lesson package.” (HSSE-1)

7.3 Challenges faced in helping students apply pedagogy effectively

One of the main challenges faced by student teachers in applying pedagogy effectively is the conflict between what the school expects from them and what they learned at NIE.

“We can only cover so much ground with this. There's only so many times we can repeat these ideas or give them opportunities to try and put that into practice. Even though we can teach them the right things, even though we try to inspire them to be like us in terms of attitude towards literature, we can't account for what they will encounter in the school. We cannot account for how they will fall in line with whatever they see in the school.

The school may be very nurturing and accommodate things they want to do or they might be very constraining all the teachers' enthusiasm. We really don't know what

they encounter in school. No matter how much we prepare them for the school environment, there's no way to anticipate every school context they encounter." (ELL-1)

"Yes, that one is tied and two, sometimes when they go to school and they try to teach in a certain way, they may-- How should I say it? They may be in conflict with what the school expects them to do. That part may be a little bit trickier... I think like I mentioned to you, if the school expects them to use certain worksheets that the school have prepared, and these worksheets may not be geared a lot to getting students to think about concepts, then the students can do anything because sometimes the schools will have certain worksheets or material that all teachers must use and some don't, some have them. There are some of the problems that student teachers may face. Also sometimes when they go for, say, a practicum, cooperating teacher expects them to teach in a certain way or to teach in a way that he or she teaches and so that one may cause a little bit of problem as well." (NSSE-4)

Another challenge that student teachers face in applying pedagogy effectively is their inexperience at handling the complex situations of the classroom and require more time and feedback in order to improve.

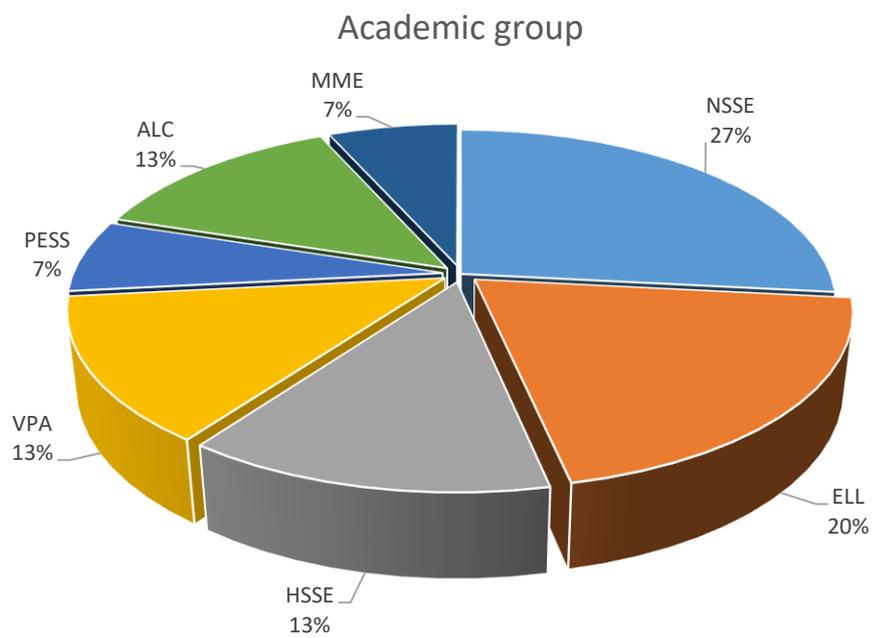
"They're inexperienced. I think a lot of things that we as a classroom teacher we know that classrooms are very complex. It's complex is because each student's response is different. Also because sometimes teaching involves a lot of speaking, explaining but when they have in mind when it come out from the mouth it may be very different. Sometimes the students themselves do not know actually when they intended it to be A but what came out from the mouth is actually XYZ... Then they do not know. Sometimes it puzzles them and they're like, "Am I on the right track or on the wrong track?" (ELL-2)

"They need time and time is what we do not have here. I've been doing re-practicum. I've done quite a few re-practicum students. These are students who fail their first practicum and they go to another school and they are generally weaker in their content area or in their teaching. Not always, sometimes it's-- I've had a student in the second practicum get a credit because she wasn't able to apply what I was teaching her or sharing with her in terms of giving her feedback and immediately applying it. What she didn't have at the first practicum probably was a mentor and time. With many of my re practicum students, that's what I see. Those who are very genuine but may be lacking in skill in something, when given the time and a mentor they do better at it. It's really to be out there doing it with somebody correcting you immediately. Yes." (ELL-3)

SECTION VIII. BACKGROUND OF INTERVIEWEES

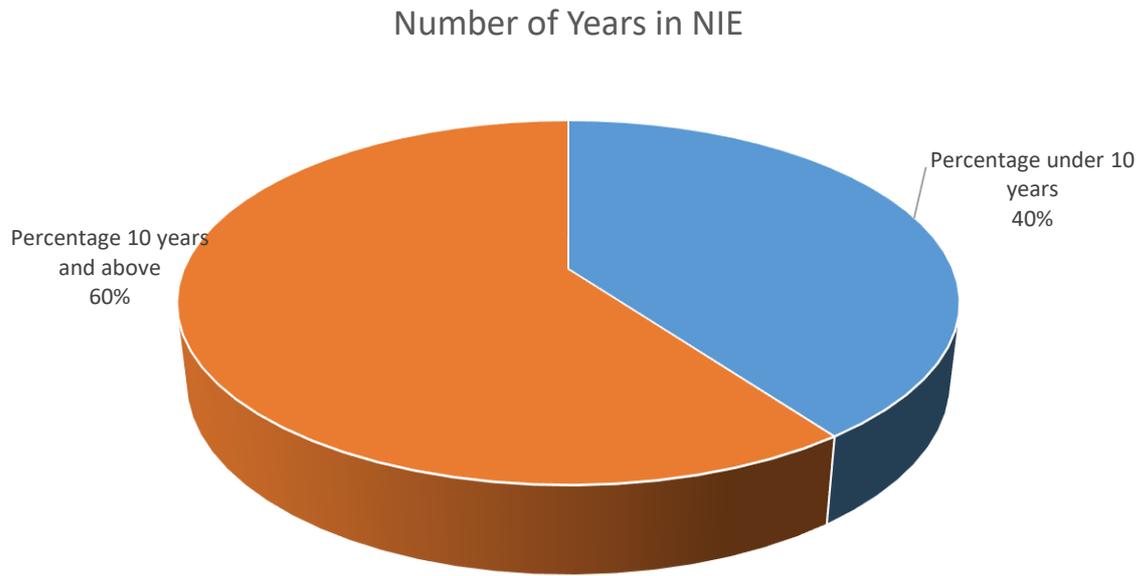
Composition of interviewees: (N=15)

Academic Group	Number of interviewees
NSSE	4
ELL	3
HSSE	2
VPA	2
PESS	1
ALC	2
MME	1



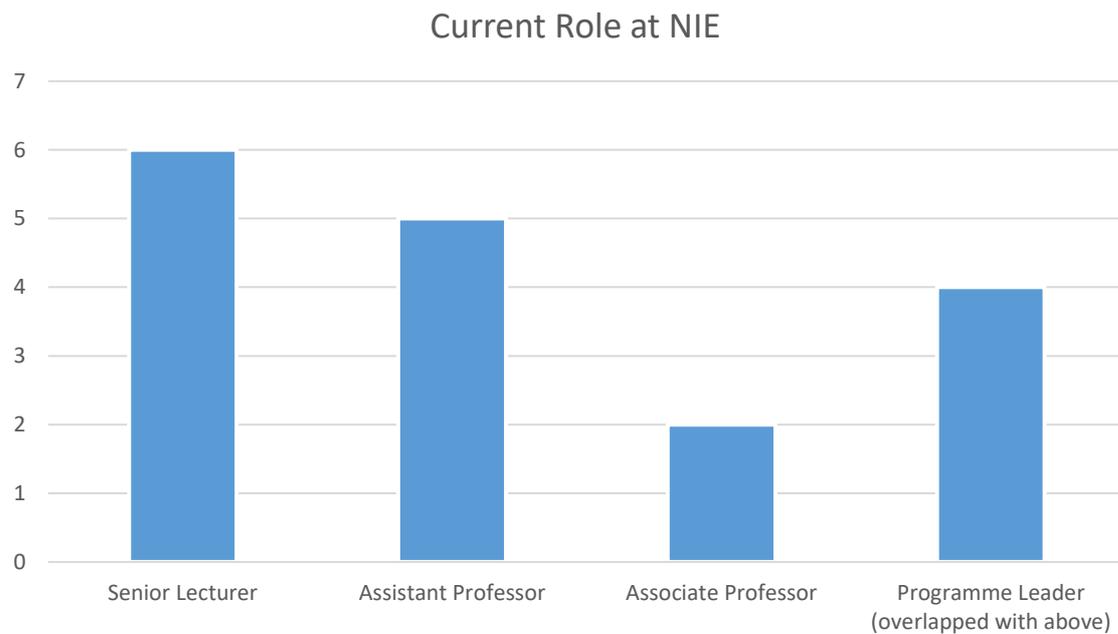
Number of years in NIE (N=15)

Average Number of years in NIE	13.8 years
Percentage under 10 years in NIE	40%
Percentage 10 years and above in NIE	60%



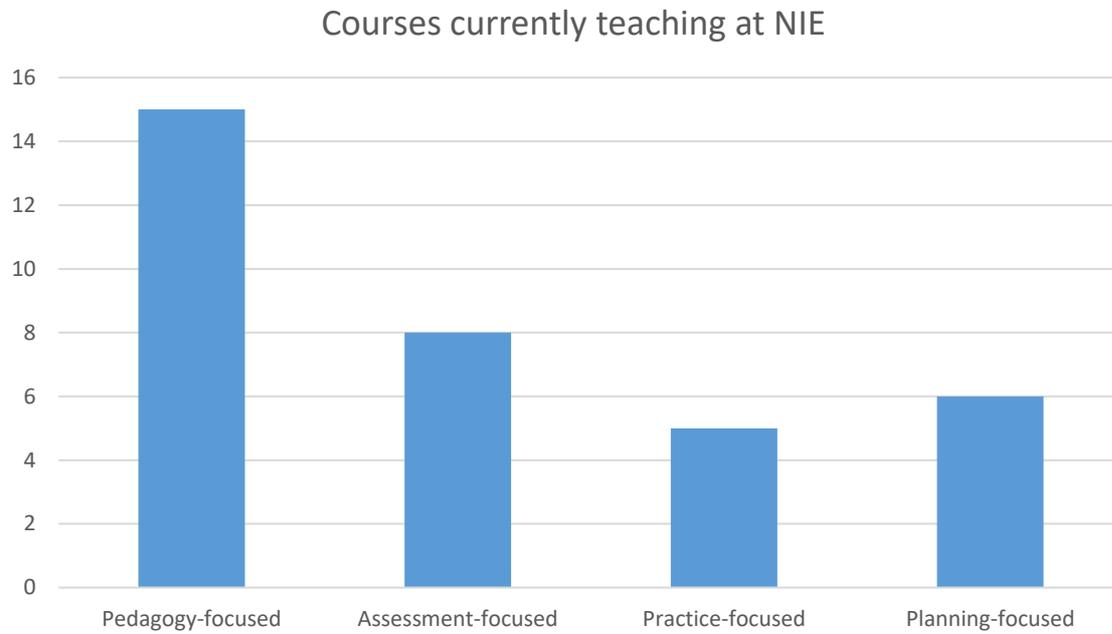
Current Role at NIE (N=15)

Lecturers	6
Senior Lecturers	5
Assistant Professors	2
Associate Professors	2
Programme Leaders (overlapped with above)	4



Courses currently teaching (numbers can overlap) (N=15)

Pedagogy-focused	15
Assessment-focused	8
Practice-focused (i.e. practicum or micro-teaching)	5
Curriculum-focused	6



Previous experience teaching in a school (N=15)

Had previous experience teaching in a school	13
Did not have previous experience teaching in a school	2
Average Number of years teaching in a school	12.4 years
Taught in a school for <10 years	6
Taught in a school for 10 years and above	7
Taught in Singapore	13
Role in school	12 Teachers; 1 HOD
Subjects taught in school	All (chemistry, biology, English literature, language arts, history, music, Chinese, math, geography, General Paper, Malay literature, Malay Language)
Levels taught in school (numbers can overlap)	12 at Secondary school level; 4 at JC level; 1 at Primary school level

RS 2/19 SC An Evidence-based Study on Effective Pedagogical Practices**Interview questions**

Name of interviewee: _____ AG: _____ Date: _____

Background

1. How many years have you been at NIE and what is your current role?
2. What is the profile of students you teach (preservice, inservice, HD) and what are some of the courses you are currently teaching?
3. Have you taught in a school before? Was this in Singapore or overseas? How many years did you teach and what level was this?

Main interview questions**1. Background of CS course**

- What are some of the key objectives or goals of your CS course?
- What are some of the key knowledge you integrate in your CS course?
- What are some of the innovative pedagogies you currently employ in your teaching? Can you provide specific examples?

2. Disciplinary pedagogies

- What are some of the key pedagogies that are unique to your discipline?
- Why are these pedagogies significant to your discipline?
- What are some of the theories or key scholars that have informed these pedagogies?

3. Understanding of the Singapore Teaching Practice?

- How have you used STP in your classes?
- What aspects of STP have you found useful to you?
- What are some of the benefits of the STP framework?
- What are some of the challenges of using STP?

4. Alignment between STP and CS courses

- To what extent do the pedagogical practices in STP align with those you have used in your classes?
- Provide examples of aspects that align.
- Are there areas of differences? Provide examples.

5. Theory-practice connections

- How do integrate content or theory with pedagogical practices in your courses?
- Provide examples of how you help student teachers make theory-practice connections in your classes?
- What are some challenges of helping students make these links?

6. Assessment of effective pedagogy?

- In your opinion, what constitutes effective pedagogy?
- How do you assess whether students can employ pedagogies effectively?
- What challenges do you face in helping them apply pedagogies effectively?

7. The connection between values and pedagogy:

- What values are important to you in teaching and why?
- How do you translate these values into your teaching? Provide specific examples.
- How are these values connected to the pedagogies you introduce in your classes?

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