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Pure Blue Sky: A Soulful Autoethnography of Chemistry Teaching in China

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ABSTRACT

In this article we portray an inquiry into the problematic impact of the Chinese National Examination system on Chinese chemistry teaching and learning. The inquiry was conducted as a soulful autoethnography, illuminating the first-hand experiences of a Chinese chemistry teacher struggling to reconcile contradictions between his humanistic ideals (of 'loose' teaching) and the technical forces (of 'strict' teaching) prevailing in his professional culture. This narrative inquiry yielded a mix of short stories and reflective commentary. In this article, selected stories present vignettes of the teacher's enactment of the national chemistry curriculum at critical periods early in his career. The article demonstrates the value of adopting soulful autoethnography as a form of professional development, illustrating how multiple modes of inquiry can open up spaces for practical moral reflection (phronesis), soulful attunement (poesis) and contemplative thinking (theoria) which, taken together contribute to a loving praxis of transformative education. Consistent with the narrative representational form of the research, this article has a diachronic storied structure which mirrors the process of the inquiry.

Introduction

In 2002 Jiesheng (Jason) Song arrived in Australia from The People's Republic of China where he had been practicing as a professional secondary school science teacher. He enrolled full-time in a Master of Science Education program at Curtin University of Technology. There he joined a group of science and mathematics teachers from various countries and diverse cultures (Nepal, Southern Africa, Indonesia, Thailand). The Masters program comprises coursework and research project. I teach the research project class and thus became Jason's research mentor.

Teaching this multicultural project class poses a number of challenges, not the least of which is how to engage students in meaningful and professionally rewarding educational inquiry when they are far removed from their professional contexts. I have found that, despite the humanistic orientation of their former teaching practices, students tend to be strongly predisposed to educational research being governed by positivist views of knowledge verification, value-neutral objectivism and impersonal quantitative methods. If left unchallenged or uninvited, many would be content with achieving the narrow goal of 'methodolatory' (Janesick, 2000), that is, learning how to manipulate research methods as an end in itself. With the goal of epistemic diversity in mind, I draw on Denzin and Lincoln's (2000) 'seven moments' framework to introduce a range of epistemologies (and ontologies) of educational research – post-positivism, interpretivism, criticalism, feminism, postmodernism. I prompt students' to consider adopting the research epistemology that best suits their (unfolding) professional interests and aspirations. Circumstances can strongly restrict choice. Some students are not able to return to their home countries to conduct field-based research, and for others inadequate means of communication back home preclude survey research or interviewing. Jason was beset with both sets of circumstances.

Because the project runs concurrent with coursework, students need to start designing research proposals prior to engaging with substantial educational theory in other classes. Initially, therefore, I focus students on developing the practical significance of

their inquiries. They write autobiographically about their lived experiences, especially as learners, as professional teachers and, for some, as teacher educators. A major benefit is development of students' authorial voice with which to articulate their (often submerged) professional values; thereby resisting the hegemony of expert voices and theoretical perspectives encountered in the educational research literature (Taylor & Settelmaier, 2003). Some students, such as Jason, extend this preliminary writing approach into fully autoethnographic self-studies in which the process of writing constitutes the act (and art) of inquiry (Ellis & Bochner, 2000; Richardson, 2000).

In order to enable students to conceptualise their projects as having a socially transformative goal (or praxis) I introduce critical cultural theorising. My teaching is shaped by a model of transformative pedagogy that has developed over the past 15 years (Taylor, 2004). A major goal, particularly relevant to this multicultural class, is development of critical cultural awareness, in relation to the question: "Whose interests are being served by existing dominant cultural practices, what are their origins, and how are they legitimated?" For example, science and mathematics education can be primary vectors of uncritical global transmission of the Western modern worldview, which can be detrimental to local cultural values and practices, especially indigenous knowledge systems (Semali & Kincheloe, 1998). My intention is to provide students with conceptual and cognitive means of strengthening their authority as owners of rich and unique cultural capital and their agency as prospective designers of curricula for school systems or teacher education programs that are sensitive to local cultural knowledge systems.

A useful means of enabling students to begin developing critical cultural awareness is for them to explore critical events in their professional life, events in which they have experienced the discomfort of being a 'living contradiction' (Whitehead, 1989), in the sense of having been compelled to teach in a way that denies the legitimacy of their preferred professional values. In time, it became clear that Jason's initial motivation to 'find the best way of teaching science in China' (his espoused reason for enrolling in the Masters program) was underpinned by a sense that in his teaching practice he had experienced being a living contradiction. From this perspective we focused his inquiry on his frustrated endeavors to develop a professional teaching practice. Thus Jason abandoned his search for a holy grail (a modernist grand narrative) and adopted Song, J. & Taylor, P. C. (2005). *Reflective Practice*, 6(1)

a modest but powerfully insightful form of research as professional development, which sought to address questions of how and why he had been prevented from teaching science in accordance with his humanistic ideals. Such an inquiry interrogates critically the dialectical relationship between free will and social determinism, a fascinating and perhaps perilous political undertaking. I counseled Jason about exercising caution in reporting criticism of his government's education policy in order to avoid possible ramifications on his return to China.

An excellent way of understanding the value of this personalized research is in terms of the reflective practitioner's 'getting of professional wisdom', as explained by the model of curriculum inquiry of Henderson and Kesson (2004). These curriculum theorists posit seven modes of inquiry which, taken together, constitute a multi-dimensional approach to transformative professional development, or 'curriculum wisdom'. Three of these modes of inquiry are salient to understanding the nature and legitimacy of Jason's research.

As a form of inquiry, 'phronesis' directs the practitioner researcher to recount and reflect on moral choices made in the course of deciding how to resolve practical problems. This aspect of Jason's inquiry involved becoming more aware of the moral dimension of his teaching practice, particularly the way he resolved moral dilemmas when his humanistic ideals were challenged by curriculum imperatives of a centralized national examination system. The philosopher of education, Gary [Fenstermacher \(1994\)](#), has argued that the validity of phronesis as a mode of inquiry can be optimized by research writing that exposes the inquirer's process of practical reasoning.

Jason engaged also in 'poesis' which brings an aesthetic dimension to inquiry, eliciting a soulful and expressive awareness that is sensitive to tacit dimensions of experience. A vehicle through which poesis can be expressed is storytelling. Jason used a narrative genre to recount his experiences, especially his felt relationships with students. The validity of this form of inquiry rests with arts-based standards of educational inquiry, and is concerned with both the researcher's representation of his/her lived experiences and the educative experiences of the prospective reader of the research. It is important that the inquiry engage the researcher in reflective, critical, creative and imaginative thinking. For the reader, the researcher's stories

should have resonance and verisimilitude and elicit pedagogical thoughtfulness (Barone, 2000; Eisner, 1997; van Manen, 1990).

As I have mentioned, autobiographical writing is important for enabling novice researchers to resist the hegemony of the totalizing discourse of academic theory which sits waiting in a plethora of educational journals and textbooks, ready to leap out and enslave the unwary, silencing the voice of their lived experience. An alternative form of theory has been described by Henderson and Kesson (2004) as 'theoria', a contemplative mode of inquiry which elicits both intuition and reason in breaking out of the 'habitual square' and envisioning new possibilities. An element of theoria is evident in Jason's stories; it prevents him from being weighed down by the repression of his past, and immunizes him from resorting to cynical despair. Theoria appears in Jason's writing as optimism for a better future in which humanistic ideals have a more prominent role in shaping the daily educative experiences of school science teachers and their students. Theoria drives Jason to communicate this vision to his reader. It is the notion of theoria that permits me, in the interest of eliciting transformative inquiry, to encourage my graduate students to take time out from the grind, to be laid back with a glass of wine, to surrender to inspiring music, to go surfing, or to do whatever turns them on.

In combination, phronesis, poesis and theoria can cushion a critical perspective on issues of social injustice and soften the critical voice protesting about gross power imbalances and resulting cultural inequities. Some say that love can be a more powerful agent of change than dissent. And so it is with Jason's inquiry. His storying promotes a peaceable praxis for transforming Chinese science education. His critique is cast more in tones of irony than ire. His call for social activism is less a siren's song and more a tribute to Ghandi or Buddha. This, then, is Jason's soulful autoethnography.

1. Research Question and Methodology

The Rising of The Research Question

Before I graduated from a university in China, as a chemistry education major, I was assigned to a high school to undertake teaching practice as a pre-service teacher.

One day, when I was wandering in the classroom of my students, I found a well-decorated notebook hanging on the wall. When I opened it, this line of words (written in Chinese) stirred my heart.

这是我们唯一的青春! ('This is our only one springtime!')

Every character was drawn in a different colour and many kinds of beautiful patterns were around these letters. I couldn't help thinking what my time in high school was like. Yes, every student has only one precious springtime. In springtime, students experience the blooming season of life.

I recalled my springtime: it was a bit boring. I was facing a very important National Exam, so most of my time was spent in books. My teachers also prevented us from going out and playing. I remember I once went out to a nearby park with some classmates on a weekend, and the next week my class teacher had a talk with me, asking what we were doing. All of us were asked to concentrate on learning not on playing. I knew all those teachers were good to us. They wanted us to study. One teacher said: 'I would rather let you hate me now than after the National Exam'.

As I kept on reading the content of the notebook, I found that it was created by a former pre-service Chinese language teacher who came to the school to practise teaching. She wanted to create a class diary to trace the class life and she wanted her students to love reading and writing. Every student wrote a small article in turn. Every page of the book was well arranged. Half of each page was used for readers to write their comments. There were many interesting stories of students' lives, among which one article attracted me.

It was written by a girl with a very good style of writing. She was a very elegant girl with a nice face and nice behaviour. But I remember her chemistry grade was very low. The article began with a short recall. She lived in a two-storey house that had many rooms. When the girl was about 5 years old, one day her mother led her to a small room. She can remember the four walls covered by tall bookshelves. Her

mother took a book from a very high bookshelf and that was the first book that she ever read in her life: 唐诗三百首(*Three Hundred Tang Dynasty Poems*). There was a touching melancholic atmosphere in the article. The girl expressed that her life consisted of reading books and that it was hard when she studied the science course; the only way she could escape was to read other books. The girl was very good at writing and very weak in science. She must have read many books. But she had to learn science better, because the exam would determine her future. Science and exams made her springtime miserable.

I could not add a comment beside her article. In my heart, I felt there was no way to make the girl feel better in that context.

I didn't spend much time doing serious research on the question during the period of my teaching practice.

After the teaching practice, I went into a high school and became a chemistry teacher of about 100 lovely students. I believe I was hard working and had a very good relationship with students. I loved my students. Like traditional Chinese teachers, I believe I had responsibility for my students' future. My work was not only for pay, but also for their future. So I held a strict policy of teaching. However, on one occasion one of my students said something to me that pierced my heart.

One afternoon, after I had given out the homework and the date of the next quiz, in a students' style with a joking voice, a student said out loud: 'You take away all of our sunshine and blue sky.' Other students were laughing.

But I felt a familiar sense of unease. My springtime was spent in books. I am thinking in my heart: 'Do I make a heavy cloud in my students' heart? Do I in fact destroy my students' precious springtime? Is there a way that I can find to replace the heavy cloud of study burden and return to my students the blue sky?' When I found my students were so hardworking but still met many problems in their learning, I was thinking whether my teaching was problematic and was destroying their blue sky.

Research Question: What are the problems in Chinese secondary chemistry education?

I didn't pay serious consideration to this question. But it was kept in a corner of my mind. Every now and then it comes out and makes me think. When I had an opportunity to study my Masters degree the question became my research topic. Now this research is what I think about the question. It is for Chinese education reform and for my lovely students. I hope I can contribute to bringing a blue sky to them in the future.

My Thinking about Methodology

Introduction to Autoethnography

A women in her mid-40s opens the door and hesitates in the entryway. A large-brimmed, floppy straw hat covered with purple bangles hides her face. A matching scarf hangs loosely around her neck. 'Professor Ellis?' I nod. 'My name is Syliva Smith. I'm a PhD student in the Psychology Department. I'm planning to do my dissertation on breast cancer, and your name was given to me as a social scientist interested in research on illness. I'd like you to be ...'.

(Ellis and Bochner, 2000, p.736)

That was the first year of my Masters Degree of Science Education in Australia. The air was pure, the sky was blue and the schoolyard was very tidy. In the sunny afternoon I sat in a chair near a window, I was reading the above quoted text in the book entitled *Handbook of Qualitative Research*. I remember the reading gave me a very fresh and bright feeling, just like the outside view.

When I was in China, I once read a philosophy book on Marxism. The book was so difficult that I had to read each paragraph many times. When I opened the book *Handbook of Qualitative Research* (Denzin and Lincoln, 2000a), the contents table gave me the same impression as reading a philosophy book. Before I started reading, I counted the number of pages, which was the first step that I take when I am reading a

difficult book. But after I had read several paragraphs, my attention was absorbed and my reading moved quickly from one paragraph to the next. It was not a very difficult article. It was like a fiction. When I finished reading for the second time the article 'Autoethnography, Personal Narrative, Reflexivity: Researcher as Subject', I understood it was a research article. It describes a picture of the whole process that a person adopts when using autoethnography as a research method. The ideas are fresh and interesting.

This was my first encounter with qualitative research. I had a strong interest in this research approach, and from then on I decided to try qualitative methods in my research.

Epistemology

Legitimation

I am a science teacher. I always tell my students a style of finding truth: first, drawing an assumption based on observation, second doing experiments to certify, then drawing a conclusion to find some universal rules. The rules are open to further justification and will work when the same conditions appear. This is a positivist perspective, and this was my old epistemology.

... the term positivism is used by philosophers and social scientists ... meaning ... derives from an acceptance of natural science as the paradigm of human knowledge ... their analyses must be expressed in laws or law-like generalizations. (Denzin and Lincoln, 2000b, p.8)

I believe the positivist research methods are powerful. They contribute to so many scientific discoveries on which, I think, mostly the developments of our material civilizations are based. We still rely on these research methods to improve our science discoveries.

In the process of my study in Australia I often met students and teachers who asked questions like: 'What do you think of Australian teaching? What is the difference between Australian education and Chinese education?' I found drawing a conclusion Song, J. & Taylor, P. C. (2005). *Reflective Practice*, 6(1)

in one or two sentences was difficult. The education situation is related to economy, politics, culture and many other aspects. Meaningful descriptions of education are based on context. To understand education, we must put education in context.

Although the positivist methods have proved to be successful especially in natural science research, for human behaviour research, like education, there are many problems with positivist research methods. Human behaviour is not like a mechanism. To some extent, it is like a living organism (Denzin and Lincoln, 2000b).

The epistemology of the research that I undertook does not belong to positivism. Instead I followed interpretive and qualitative methods and took my teaching experience as a case study. The research process constituted my critical reflective thinking about my teaching experience. It was based on my personal experience in an autoethnographic style that requires the researcher to keep conditions and variables as natural as possible (Cohen, Manion and Morrison, 2000). My selection of this qualitative method was based on the following considerations.

- My teaching experience is meaningful to others on condition that readers need to construct their understanding from situations.
- My teaching activity and its results are strongly related to context and situation.
- The interpretation of my teaching and results is multiple and time-bound.
- The research itself is affected by my values, philosophy.

The autoethnography was my personal interpretation of my teaching experience. As it comprises stories of the past and is descriptive, stories can be wrong by memory recall. But they don't 'threaten the project of personal narrative', for the storytelling is not for 'a neutral attempt to mirror the facts of' my past teaching work. The stories are 'only within the memoro-politics surrounding the accuracy of recovered memories' (Ellis and Bochner, 2000).

Representation

I used to believe that the passive voice should be used when a writer wanted readers to pay attention to the object of their writing and to eliminate the effect of their

subjectivity. Articles written in the passive voice often give an academic atmosphere, for they have the intention to demonstrate their neutrality to the reader. In these articles writers often support their ideas by experiments or well-accepted authoritative ideas. They avoid using personal feelings for they think that feelings are not reliable. However, qualitative research does not treat reliability like this.

Qualitative research theories assert that truths have strong relations with situations. People construct their own understanding of truth based on personal experience. In this research method, journalism characterizes qualitative research reports. Many narrative and even autobiographical fiction style approaches are used in qualitative research (Denzin, 2000). I felt that a narrative writing style for a research report would benefit my research in the following ways.

- Reports present in a language that is more near public than before.
- Reports describe ‘in-depth’ and natural stories for public to rebuild their understanding.
- Authors enrich reports with rhetorical approaches, thus research studies have great power to arouse readers’ reflective thinking.

Reports of the same content using different writing styles may have very different effects on readers (Denzin, 2000). Reports of research can aim not only at interpreting the world but also at changing it. It is evident that words can have a profound effect on people. As I take my teaching experience as a researching case, the narration of the research report followed an autobiographical style. This method is very different from science research methods. Such a research report may look like fiction but it is much more than fiction. The author of an autoethnography offers readers a lens to look inside their own mental processes at some aspect of education. In this way, readers may gain a deeper understanding of their own perspectives ([Ellis and Bochner, 2000](#)).

In the research report I follow the time line of my teaching activities which also represents the chronological process of my educational conceptional development during this research inquiry (Song, 2003). This representative structure is consistent with the qualitative and narrative nature of my research. The narrative research report

form and the research itself should be of the same logic, which often leads to a 'diachronic' style of reporting (Stapleton and Taylor, 2003).

Praxis

In the context of educational research, praxis is a term that is applied to a researcher's practice that aims to transform people's social roles but which, recursively, can also transform the researcher's own social role ([Lemke, 1995](#)). In the role of researcher as learner, my understanding of teaching, research and education changed significantly.

The central aspects of my research activity were writing and reflecting on my past teaching experience. This activity was stimulated and focussed by my unfolding understanding of educational theories that I encountered during my studies.

The writing was not like a video recorder that recorded my detailed teaching, so field notes were not necessary ([Ellis and Bochner, 2000](#)). The writing itself was researching. A detailed activity plan could not be clearly designed in advance, for this qualitative research needed to be open-ended with the possibility of the plan continuing to change.

I believe the detailed picture that I constructed of my educational experience can provide a means for readers to reflect on their own practices, and thus provide the opportunity to change their perspectives on education.

As time goes by, my subsequent teaching practice will enrich further the experience of this research. My ongoing professional research will be developed by more and more emergent situations that arouse my reflective thinking.

Significance

Perhaps many teachers experience the process of moving from 'loose' teaching approaches to 'strict' approaches, especially when preparing students to face important national examinations. In China there is a tradition that teachers often punish students in order to improve their achievement. If education faces tough competition, strict approaches sometimes cannot be avoided. This research launches Song, J. & Taylor, P. C. (2005). *Reflective Practice*, 6(1)

reflective thinking about strict approaches common in China and inquires into the underpinning reasons. Using narratives, the article portrays a detailed picture of the curriculum of science in a Chinese secondary school. It is intended to provide an opportunity for the reader to reflect on problems and reasonable patterns of teaching methods and curriculum associated with their own professional practice, especially in Chinese contexts.

The situation that I represent is a specific case related to curriculum and teaching patterns in secondary chemistry education. My reflections about strict teaching approaches and Chinese chemistry curriculum were shaped by constructivist learning theories, curriculum theories and supervision theories. I purposefully adopted Western theories in an attempt to enrich the pathways for finding a reasonable teaching style and curriculum for science education in China.

2. Strict Teaching

The Turn to Strict Approaches

After graduation from university, I went to a school and became a chemistry teacher. In the beginning, I always treated students in a 'loose', or relaxed and informal, manner.

Students' Brother

I had good relation with students. Students addressed teachers with names like 'Teacher Song'. In China, 'teacher' is a polite title. High-level specialists are often called 'Teacher', especially in the Art and Academic domains. It is very common and polite for students to ask their teacher: 'Teacher, can you explain the question to me?' However, my students did not call me 'teacher'. They called me 'LAO BAN'. It is a Chinese slang word for 'home-room' teacher.

The biggest problem I met at that time was that I was too loose with my students. It was because I was too friendly with them. It was also because I did not know how to be strict, as I was a new teacher.

I didn't treat seriously my students talking in the classroom and I also didn't know how to strictly control the situation. Sometimes I took them afar to parks. Students felt that I was their brother, not their teacher. A senior teacher told me at that time:

“It would be very difficult for you to control that class later if you ever formed a relationship like their brother.”

This was a very famous teacher in our school. He had a kind of magic power to enable his students to gain average marks 10% higher than that of any other class at the same level [I mentioned 'exam' again, didn't I? It seems strict teaching is related to exams especially public exams.] But I didn't take his words seriously. In my heart, I felt strange about his words because I felt my students were lovely. I didn't like to treat them strictly like an enemy and I liked to have a good relationship with them.

Because I was loose, I often forgave students' disobedient behaviour in class. About three months after I began teaching, I experienced the problem of students not respecting me and I found it a bit difficult to control them. And in my home-room class the exam results in all subjects proved to be not as good as other classes

Learning the Last Lesson

At the end of the first year of my teaching, the average mark of my class in the chemistry exam was worse than students of other chemistry teachers, and most other teachers who taught my home-room class felt that it was difficult to improve the students' exam performance. I came to understand the senior teacher's words. Elder brothers always play with younger brothers or sisters and they don't play the role of keeping discipline and serious education. I tried to change the role, but it seemed that my students and I were too familiar with one another to be serious.

This kind of bad situation made me feel the need to change my style of teaching, but the feeling was not very strong and I attributed the cause of the situation to my lack of teaching experience rather than to my loose policies.

At the end of my second year of teaching, my first group of students graduated. I felt a bit sad when I walked past the empty classroom. In my heart, I felt the whole class of happy-talking students had disappeared from the schoolyard. However, one day four of my students came to the schoolyard to play, and we gathered to talk. As their marks in the city level public examination were not good enough, they didn't go to good schools. During the chat I heard one student in a very low voice murmur:

“If I was in another class, I may have got better results in the public examination, and now I could be in a better school.”

I think most teachers would be hurt by these kinds of words. It was especially hurtful when I believed that I liked my students and had been so kind to them. But now they somewhat resented me.

I gradually understood that my loose style of teaching could not be used for my next group of students [again, related to the exam, really?].

When the next group of students arrived, I changed my teaching style. It was easy to change my role for the students were new to the school. I changed from a brother-like role to the role of a teacher, and moreover a strict teacher. Also at that time, I had enough experience to know how to be strict.

At that time, I carefully thought about my teaching style. I realized that I had the responsibility of a teacher, so I needed to save students' time and make time at school meaningful. That was the really good thing that I could do for them.

I also realised that the most important priority was the public examinations. It was my students' future. I had no right to spoil their future. I should have paid much more attention to this very important aspect. [Exams affect teaching, right?]

My Strict Teaching Policy

The new semester began. I had three new classes to teach chemistry and I was also a home-room teacher for one of them.

In the first week, I walked into the classroom for the first lesson. It was only an introductory class. I did not talk about subject content in the class, but I explained some requirements.

“You must listen to my lesson carefully, master each topic that I discuss and reach the objectives.” I spoke slowly with a clear voice. I didn’t pay much attention to students who did not follow my words at all. Some students were just chatting. One student even threw a new textbook to other students that led to laughter of the whole class. I keep on explaining my requirements and wrote them on the blackboard with chalk without criticizing my students.

I explained that the objectives of each topic were directly related to the National Exam, and I guaranteed to prepare teaching plans well and that my lessons would be easy so that students could achieve the objectives if they listened carefully.

As I promised, I spent much time preparing the lesson for next class and put the objectives on my Website.

Two days later, I gave the first lesson of “Senior High School Chemistry”. A few students chatted in the beginning, but later their voices vanished. I believed my class could absorb my students’ attention. I divided the 45-minute class in two parts. The first 35 minutes was for lecturing. In the final 10 minutes I put an overhead transparency on the screen and asked the students to finish two questions as a small quiz. When the bell rang. I walked down the aisle between students’ desks. All students should hand in the paper to me without delay. Any delayed paper would be put into another category and points would be deducted.

The quiz questions were similar to the examples in my lesson and the examples were taken from the original National Exam questions. The topics in my lesson were much more complex than the syllabus requirements. I could achieve the requirements of the syllabus in about a week for the first chapter, but I often used one month to handle the first chapter, because I added many more discussions about problem solving and

students did much practice for future public exams. I put all the topic requirements in a list of objectives on my Website every day before class.

After class, I spent 30 minutes marking all the papers of that class. The students who had marks lower than 60 were asked to stay behind after school and listen to my discourse again until they succeeded in answering my questions.

Although students knew that an additional class could help them in reaching better understanding of the topic most regarded the after-school-detention as a kind of punishment, for they could not go home with their friends. I never admitted that it was a punishment. I only confirmed that it was a kind of assistance to students' learning. My policy was welcomed immediately by parents. Many parents' phone calls came to the principal to express their thanks that a chemistry teacher did so much additional work to help their sons and daughters who lagged behind in learning. But the students often felt terrible when they found their names on the detention list.

After one week, when I went into classes, students become quiet immediately, and no one ever dared to throw books to others any more. I believe my strict teaching gained respect from students. Students had learned the meaning of what I said in the first lesson: 'you must listen to my lesson carefully, master each topic that I discuss and reach the objectives.' They also knew that I did not say empty words, because the experience of doing exercises after school until achieving the objectives gave them a frightening feeling. When I asked some students about their feeling, they said: 'The 10 minute assessments in your classes give us strong pressure. Some students want to hack your Website to destroy the objectives you list on the Web pages.'

Other teachers complained that students spent too much time on chemistry and that time spent on other subjects was not balanced. However, my principal supported me with all his efforts. He had a son in another class of our level. The principal once said to me: 'My son talks about you almost every day. I investigated some students, they said you are the best teacher they have ever met.'

In the first semester in the autumn of 1993, my strict policy received three results. First, some students felt strong pressure that produced both motivation and anxiety. The positive aspect was that students gained motivation, but the negative aspect was that students who had difficulty passing my quiz began to be afraid of learning chemistry. I solved the problem in my old way, by talking and making friends with this group of students. Second, my students' achievements in chemistry were very good. Third, my colleagues claimed that students' performance in other subjects dropped.

Reflections

Deep in my heart I still felt students were lovely, but I needed to train them for the National Exam. I needed to adopt the role of a strict teacher. A loose and joking style did not fit that role. My deeds were really for students' benefits.

In the situation of that time, successful teaching greatly depended on teaching management. I found the first important step was that I must make all the students pay high respect to my requirements.

The ten-minute assessment played an important role in my teaching. First, it worked as formative assessment that checked if students had mastered the topic, and thus served as feedback to my teaching.

'Even for the simplest question, never believe all students can gain mastery.' This idea was confirmed again and again in the process when I was marking students' quiz papers. I found that students could have all kinds of misunderstanding and weakness that I had never imagined. Sometimes the misunderstanding resulted from my teaching methods. Sometimes it came from students' personal background knowledge.

The mistakes that the whole class tended to make commonly often stemmed from points that I had not explained clearly step by step. The steps should not be too big. To some students, one step in a lesson that was not taken well would mean that the later time in the lesson was meaningless. Jonhstone and El-Banna (1986) explained Song, J. & Taylor, P. C. (2005). *Reflective Praticce*, 6(1)

how knowledge structures work. Concepts are hierarchically linked in the knowledge structure. When students engage in thinking, their thinking abilities are affected by the capacities of their working memory, so students can only handle limited variables at the same time. Teachers also have a limited working memory. In their knowledge structure relevant concepts are linked well to become groups, so they appear to be able to handle more concepts than ordinary students. So students cannot have so fast a mind and the teacher often needs to expand the explanation to more steps in order to fit students' thinking.

Another useful method I found was that I needed to teach in a student style of thinking. The way and speed of teachers' thinking are quite different from that of students. Sometimes students can explain a complex problem to another student better than can a teacher. It is largely because they have a similar thinking style. This situation is consistent with constructivist learning theories. Student learning is a self-construct of their own knowledge. Teachers' explanations cannot replace students' mental work. As students' background knowledge could not be the same as the teacher's, a new concept is linked to the old knowledge structure in ways different from those of teachers. Sometimes, students' knowledge structure tends to have the same pattern. And teachers should change the discourse to a way with which students are familiar.

Teaching becomes difficult when students greatly differ in their understanding of the levels of the topic. Teaching can go to the next step when most students understand the basic concepts and principles of a previous step. Teaching could go smoothly when the students who lag behind are helped to catch up with the others. I remember in those afternoons, my time was mostly spent on 'weak' students.

A quiz can find out not only the weakness of teaching but also weak students. In the afternoons, I asked the weak students face to face questions, in the process of which I learned how they thought about problematic points of knowledge. I got good timely feedback from my students, so I could change my teaching plan accordingly. It was an efficient way of teaching.

Formative assessment not only has the function of obtaining feedback but also can increase student motivation. 'Academic achievement in classes where effective feedback is provided to students is considerably higher than the achievement in classes where it is not.' Marzano (2003, p. 37) suggested formative assessment could give students feedback about their learning. It could serve as motivation, but it must be timely. So, in my teaching, the quiz served as motivation for students, and the motivation was strong and effective.

3: Strong Power

The Public Examination

The first semester of my new group of students in the school started in autumn 1993, and ended in January 1994. At the end of the first semester, my students took a city-level public examination.

In order to prevent cheating, the school mixed all students of different classes at the same level and arranged a classroom and a seat for each student. It was based on the consideration that the students who were in the same class knew each other well and might undertake cheating easily. In my level, the arrangement was stricter. Students were ranked in a list according to the marks of their internal mid-semester examination. Students' seats were assigned according to the list, that is, in the first examination room the first seat was for the number one student in the list, and in the last examination room the last seat was for the last student in the list. It was based on the consideration that students with the same performance level had less likelihood of giving effective help to each other by cheating. If a room was full of 'poor-mark' students, they could not help each other for no one knew how to do the question. In a room full of 'good-mark' students, help might be not necessary for most of the students knew how to do it.

After the examination, students' answer scripts were sent to the Secondary Research and Development Office in the district of our school. I took part in the marking procedure of the papers. The place used for marking was in another school in the same district as my school. The teachers from the school that took part in the public

exam marked different sections of each exam paper in turn. The answer scripts already had the candidates' name covered. It was called city-level 'United Exam' (统一考试) and district-level 'Flow Marking System' (流水批改)ⁱ, in Chinese. This arrangement was to make the standard of marking the exam papers of students from different schools comparable and objective.

Not long after the 'Flow Marking', the Secondary Research and Development Office sent to each school a report of the results and analysis. I found the report at the office of the head of science department in our school. The results and analysis included the mark of each student, the average mark of each school, the average mark of each teacher's students, and the percentage of students with the correct answer in each question in the exam. Shortly after that, relevant portions were handed out to teachers. Home-room teachers would hand out the results to students together with a list of the rank of their marks.

The reports were made public to all teachers and school leaders. Thus the school leader knew clearly how 'well' each teacher was doing. The students knew clearly how well other students were doing. As it was a district-level 'Flow Marking System', even teachers in other schools could know how well the teachers were doing in my school. This situation easily aroused competition between students and between teachers.

The Parent-teacher Meeting

In the spring of 1994, my students were in their second semester of senior one. At the beginning of the new semester, I held a parent-teacher meeting. This meeting was for reporting the examination results of the last semester to the parents.

Obvious work that every class teacher needed to do was to hand out to parents the reports of students' marks in the public exam of the last semester. I did more than that. I analysed the marks of students in my class. The analysis included ranking students' marks in a list and comparing the ranks of each subject mark of each student. Parents were important supporters in education. I spent much time explaining

how parents could recognize children's achievements from a set of marks, how parents could help their children, how to contact schools to know more information.

At that time, public examination was very familiar for students and parents. It almost became the centre of their school life. Marks became an important indicator of students' performance. Another indicator that was actually more important was the mark rank in the whole class.

My strict teaching went smoothly in the following semester. Time went by quickly. One year later, my students were facing one of the most significant events in their lives, the National Exam.

The National Exam

I had taught this group of students for two years. In the third year, my students were facing the decision to select the direction of their studies, social science or natural science. They had to select because the National Exam paper was in two types: social science or natural science.

I was busier in the third year of senior high school. My colleagues and I often had to go to school at 7:30am and leave school at 6pm. Students often were given additional lessons, about 10 hours a week. My students were engaged in intense study. When the National Exams were approaching, students often studied until mid-night [It was a strong motivation produced by the assessment system, wasn't it?].

About three months before the National Exam, I bought many books that forecast the National Exam questions. I had finished all the lessons. My students and I prepared for the mock exams. The Secondary Research and Development Office of the city level arranged three city-level mock exams. Researchers in that office wanted the future average mark of the city in the National Exam to be high because the city's student achievements were also an indicator of their performance.

One month before the National Exam, the paper setters went to Beijing and were locked into a place. They would stay there till the National Exam began. Two weeks

before the National Exam, we released the students to study by themselves. Before they went home, I gave each of my students a National Exam sweater, a white sweater bearing the sign of the National Exam. They had to wear this or they could not come into the exam centre unless they were certified by a school leader to be a candidate.

During the National Exam week, the exam was the topic of the newspapers and the TV all over the country. In my city the taxi cars voluntarily gave free rides to students in National Exam sweaters. On the days of national exams, I was an examiner in one exam centre, but my students were far away in another exam centre. Every day I passed through hundreds of parents who had sent their children into the exam centre and were waiting anxiously in front of the gate. Their anxiety would continue until their children's marks were out. [The National Exam was really an important event to a family, wasn't it?]

About 20 days after the National Exam, students knew their results from the telephone service of the exam office. About 5 days later, we received students' marks and the analysis of exam results.

When students' marks were above the university entrance level, they had a great chance of going to a university. University learning often determines a students' career in China. Students with good marks often came to see me after they had received their report. I knew some of my students who had poor marks locked themselves behind doors and wept for days.

This was one of the National Exams I experienced.

Reflections

We were in a strongly exam-oriented education system. It seemed that every aspect of education was controlled by the National Exam.

Power of Control

It can be seen that a powerful and effective assessment system worked in secondary education. The centre of the assessment system was the National Exam. I believe that the assessment system worked efficiently and effectively in my teaching context.

I have to explain that all my in-class assessment questions were imitations of the National Exams and all the topics taught in the lessons were related to National Exam questions.

We were in a kind of outcomes-based education. However, the real outcome that teachers and students pursued was not the official one stated in the clearly written curriculum documents. The real outcome was achievement in the National Exams.

Motivation

Our assessment system had obvious competitive characteristics. The assessment system produced strong motivation for both students and teachers.

All the evaluations of teachers were based on their students' performances. Teachers gained motivation from the pressure of the publication of the analysis of students' assessments results. The National Exam provided feedback on teachers' work. The feedback was related to teachers' reputation and job position.

Students worked much harder in secondary schools than in primary schools and universities, mainly because of the competitiveness and selective characteristics of National Exams. They showed motivation, because the results of public examination of each semester were open to all students and parents. This aroused competition between students. Student motivation also came from their anticipation of going to good universities because the National Exam was actually the university entrance exam.

We often find that Chinese students and teachers work very hard. Students often study till mid-night and teachers often work overtime even if the overtime work is without

pay. This is the reason that many people believe that being a secondary teacher is one of the hardest jobs in China.

4. Curriculum Validity

Demonstrated Uselessness

In the spring of 2000, as a district-level key high school, my school applied to become a city-level key high school. We were very busy preparing for such a change. We had a new building constructed and all the facilities updated in the school. Teachers and students had their desks and chairs changed to new ones. We even were asked to rewrite our teaching plans for the past three years in a standard form. The administrative officers were to check our eligibility during a one-day visit to the school, but we had prepared for about one year for the visit.

On the day when the administrative officers arrived, I was asked by the school leader to give a demonstration lesson. After carefully reviewing the information about the model classes that famous teachers had ever held, I designed my lesson in a discussion style. The whole process was piloted by a flash movie.

When the class finished, the administrators said: 'We have found what we want to find in your class. You seem to know what we like to see.'

Students felt very happy and excited in that class. Later on another day, I talked to my students and asked if we should follow the same style in our daily lesson.

Some students said: 'It is good for we can understand. The class became easy. I don't feel sleepy, for I discuss with other students.'

However, other students shook their heads and said: 'It is a bit empty compared with your daily lessons. It is slow. A whole lesson time was used to discuss only a small section of content. So much time was wasted in discussion. In your daily lessons, we can learn more than in this lesson. If you teach with this style, we can only get half of the marks of normal level. How can we go to the National Exam in the future?'

One of my colleagues commented: 'Typical demonstration lesson model without any usefulness'.

At another time, I went to a famous school in the city to visit a class. The lesson was conducted in a form of research report meeting. The special feature of the meeting was that a group of students were the presenters and other students of a class were participants. It was about pollution situation research. In the beginning, students provided a short movie they had made of a river. Then they presented some water samples. After a short review of the principles and theories, the whole class carried out a discussion about the pollution types and how to investigate pollution in water. Students were grouped to discuss and give results. The lesson ended with a movie show about sea pollution in an area of coastal water.

When the lesson finished, all the teachers were arranged to discuss the lesson. The chemistry teacher of these students explained that it was a lesson in which students were the actors and actresses, while the teacher was only a director who did not appear on the stage.

After the discussion, I asked the teacher if she taught every day using this method. She gave a laugh and said: 'The Research and Development Office asked me to give a demonstration lesson for research. This lesson took away from my students all their spare time for almost one month. I selected those 'exempt-exam'ⁱⁱ students to carry out the program. It is ridiculous. If we all teach in this style, how can we take the National Exam?' The teacher left the room walking quickly and holding a pile of students' exercise books.

Teachers often demonstrated modern teaching styles. I did not know if they were better than the methods that we were using. The strange situation was what we demonstrated was actually useless in real teaching.

Taught Uselessness

My students once criticized me. It was in the middle of my chemistry class. When I introduced properties of alkali metals, I suddenly recalled a short story about Thomas Edison, a well-known inventor. As my students often made fake experimental results, I wanted them to know how scientists treated experimental data.

I started introducing the story and describing the situation. I believed that a story should attract students' attention, but the situation was strange. When I was telling the story, students who had been taking notes put down their pens and appeared to relax. I found that several students didn't listen and began to try to contact other students.

I stopped the story and kept on teaching about the alkali metal. Then, gradually, the students' attention refocused on the blackboard.

Later, I asked some of my students about their feelings. One student answered: 'You know well we are going to take the National Exam. Has that story any relevance to us?'

I should have understood this situation. I knew my students were busy, especially in the senior level. Their time was precious. During the special time, the school students often locked the computers to prevent playing computer games, stopped watching TV to save time for their study. All their activities were for the National Exam. So my behaviour in teaching was perceived as 'wasting' their time.

Reflections

Occasionally, I happened to read the Standard of Chemistry Education (SCE) (Education Ministry of China, 2002). The SCE clearly states that that chemistry course in senior level aims to develop students in three aspects: the knowledge and skill aspect, the method aspect, and the values education aspect. In the method aspect, students are required to be able to understand chemistry and carry out elementary chemistry research. In the values education aspect, students are required to develop

their affections in learning chemistry, to apply chemistry with enthusiasm in society, to evaluate and judge chemistry issues in society.

In my teaching, I felt that the first aspect of the SCE could be focused on, but I could not focus on the other two aspects. This situation was common in Chinese chemistry education. It was a problem of curriculum validity. Why did the national curriculum not work?

I could feel that the discussion method had some special power for it could make more students understand the topics than could my normal lecturing. The only problem was that it took too long a time to cover the topics, so it did not fit in a strong National-Exam-driven teaching context. Discussion could be a good student-centred teaching style leading students to develop deep understanding, because in the discussion students actively use their knowledge. However, even if the teacher-centred lecturing style led to shallow understanding, this style still dominated teaching. The deepest reason was the National Exam.

In the research report demonstration lesson, the research style was regarded as ridiculous for it had no relationship with the National Exam. However basic research skills were included in the requirements in method aspects of the SCE.

In my class, students rejected the story about Thomas Edison. It was certainly the failure of values education. The content was about scientific attitude. Students felt it was a waste of time for they had to save time for the National Exam.

The National Exam focussed only on knowledge and problem solving skills, so the powerful National Exam did not make the national curriculum valid in the method or the values education aspects. What worked was the hidden curriculum of preparing students for national exams. Practical skills and values education were not tested in the National Exam so that teachers, students, parents and school leaders often did not care about these aspects. This is a loss for education.

The assessment system was powerful in Chinese secondary education. One positive aspect of this power could be that it effectively caused students and teachers to work very hard toward a common goal, success in the National Exam. However, the powerful National Exam affected almost every part of secondary chemistry education. It made all the educational resources focus on the National Exam, so in secondary schools, values education, discussion methods and basic research program were replaced by procedures for preparing students for the National Exam. The national curriculum objectives were valid only in respect of knowledge and skill aspects.

The Chinese secondary curriculum has undergone much reform since 2000. Educators and researchers have already identified the problem of curriculum validity. More and more attention has been focused on how to prepare students for society, not only for the National Exam.

Features and Benefits

My autoethnographic inquiry reported in this paper employed a narrative writing method. When I finished my narrative, I went through the whole process of my writing and reflected on the features and benefits of the inquiry.

Features

Self-consciousness Feature

Autoethnography is a type of qualitative research. Compared with conventional social science research in which the authors keep a neutral attitude and passive voice, autoethnographic inquiries switch to a new relationship between the researcher and the subjects. The researcher is the main subject, regarding him/herself as a phenomenon and providing narratives of his/her personal life. This is the self-consciousness feature of autoethnography.

Emotional Feature

This new relationship also includes a new focus in autoethnography. In conventional positivist research, the focus is on justifying logical credibility. In autoethnography Song, J. & Taylor, P. C. (2005). *Reflective Practice*, 6(1)

this focus is replaced by pragmatic reasonableness. In positivist perspectives, human knowledge is regarded as a mirror of an outside reality. Postmodernism believes knowledge is ‘understood as an agreement reached by a community of scholars’, and is a ‘construction of models or maps of reality’ (Tierney and Lincoln, 1997, p. 7).

A story’s ‘validity’ can be judged by whether it evokes in readers a feeling that the experience described is authentic and lifelike, believable and possible; the story’s generalizability can be judged by whether it speaks to readers about their experience. (Ellis, 1997, p. 133)

Instead of focussing on logical credibility, autoethnography focuses on peoples’ personal experience, and on how meaningful and affective research can be in ethical and moral respects. This is the emotional feature of autoethnography.

Narrative Feature

Autoethnographic inquiry often includes personal evocative stories in a first person voice. Researchers are like practitioners. They are involved in a set of actions along a timeline. Autoethnography gives detailed descriptions of actions with the purpose of focussing on a journey instead of on results. This enables the report of the inquiry to be more accessible and readable. This is the narrative feature of autoethnography.

Benefits for My Professional Development

Writing as Learning

In the past, I was taught that writing is for reporting our research findings. So we must have very clear findings before writing. However, in qualitative research, we can write for the purpose of both finding and learning something (Richardson, 2000). In autoethnography writing becomes the process of inquiry. In my case, writing was a method and also the process of my research. I did not explain the problems as a simple conclusion, rather I endeavoured to embed them in vivid scenarios.

I began the writing with the need to understand education. In the beginning, two questions aroused my interest: How can I improve my teaching? What is the problem

with my teaching? I started my writing without much understanding of the problems in Chinese education. In the story writing, I was immersed in reflective thinking and perspectives became clearer and clearer.

I wrote my stories twice. I could feel the process of my writing was like walking into my history. I examined concrete details of my teaching experience, and along the way I got many new thoughts and clearer conceptions. In the process of writing for the first time, I took many other science education courses. The learning of other education theories - learning theories, supervising theories, curriculum theories - gave me more tools for my reflective thinking. Armed with new tools, I went into the journey of exploring my old experiences for the second time. Writing and re-writing stories and narratives helped me more clearly understand the new education conceptions.

Meaningful Insights in Professional Practice

The teaching profession needs personal ethnographies because teachers need to understand both students and the teaching context. When intercultural understanding is essential in teaching practice, ethnographic inquiry would be a very meaningful activity.

When I was a high school teacher, I used to read education theory books. Those books led me into thinking about my teaching. However, I cannot clearly remember the content of those theories and also I cannot remember their effects on my everyday teaching. During my previous teaching experience, no event gave me insights into my experience as deeply as did storytelling. Education theory courses can elicit reflective thinking, but they tend to give more abstract perspectives. For me, narrative inquiry enriched the abstract education perspectives with meaningful, fresh and detailed insights.

The End

For privacy purposes, the place, time and names in my stories are not real. You can tell how real the stories might be.

This writing is dedicated to learning lessons from my personal history. During the writing process, a clear sky appeared in front of me as I passed through the deep forest of my history. The sky is my new picture of my teaching. Teachers must change themselves before changing students and changing their teaching. The sky is in my mind. Under the sky, there are my Chinese students, with happy smiles, enjoying the sunshine.

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ⁱ 'Flow Marking System' is a participating marking system, a marking method that every student's paper in an exam is marked by a number of teachers for objectivity.

ⁱⁱ 'Exempt-exam' students: Some students in Chinese high school are selected to be exempted from the National Exam to go to a university, because the schools in which they study have contracts with some universities.