

Reforms in pedagogy and the Confucian tradition: looking below the surface

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Abstract This Forum article addresses some of the issues raised in the article by Ying-Syuan Huang and Anila Asghar's paper entitled: *Science education reform in Confucian learning cultures: teachers' perspectives on policy and practice in Taiwan*. An attempt is made to highlight the need for a more nuanced approach in considering the Confucian education tradition and its compatibility with education reforms. In particular, the article discusses issues concerning the historical development of the Confucian education tradition, challenges in reform implementation that are in reality tradition-independent, as well as opportunities and points of convergence that the Confucian education tradition presents that can in fact be favorable to implementation of reform-based pedagogies.

Keywords Education reform · Confucian education tradition · Constructive alignment · Convergence

Justification and arguments based on “culture” or “tradition” can be emotive and difficult to address, not necessarily because they are logically more defensible than others, but rather because it is easy to become blinded by such overarching and not infrequently nebulous and hard-to-define concepts that people nevertheless feel strongly about. If care is not taken to examine and define what aspects of culture and tradition are being invoked and what actual influence they have on the question at hand, surface differences between

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traditions and cultures can be attributed more weight than they deserve, potentially preventing deeper analyses and reflections about the issue at hand. Tradition and culture can in this way become a trump card that goes unscrutinized. The following discussion begins with considering how the Confucian education tradition can be interpreted, in particular in light of its evolution over time, in order to try to better understand the origins of some of the practices and values that traditional teaching methods are seen to promote. This is followed by a discussion of some arguably general and tradition-independent factors that have most likely influenced the teachers' practices and attitudes towards the educational reforms reported in the present study by Ying-Syuan Huang and Anila Asghar. An attempt is then made to look for possibilities and points of convergence that could allow for adaptation and implementation of education reforms, without needing a wholesale abandonment of the current system and values.

Examining the trump card: the Confucian education tradition

An important starting point for considering the educational context in countries with a Confucian education tradition is that this concept is neither immutable nor monolithic. While the classical texts such as the *Analects* are still studied and often cited as the basis for the values and practices in the Confucian education tradition, the interpretations and actual practices associated with this have changed over time (the term "Confucian education" has been chosen here instead of "Confucian learning" to include more broadly the educator, the learner and the education system itself, whereas the latter term risks being construed narrowly to include only the learner's behavior).

In recent decades there has been considerable interest in the so-called "Paradox of the Chinese Learner" (for a review, see: Cheng and Wan 2016). A common perception is that the Confucian education tradition is exemplified by core features such as rote-learning by students, the teacher as an authoritarian figure for transmitting knowledge to passive students to commit to memory without question or reflection, and a primary focus on standardized examinations requiring recall of accepted answers. While these practices and pre-conditions would be expected to lead to surface learning and poor conceptual understanding according to the constructivist school in the Vygotsky and Bruner tradition, students from Confucius culture heritage (CHC) countries have nevertheless out-performed their Western counterparts in international standardized tests, most notably PISA. This perceived paradox has led to much research and discussion to examine more carefully what the Confucian education tradition really entails.

Apart from pointing out the over-simplified interpretations of teaching and learning practices in CHC countries (reviewed in Rao and Chan 2010), an important point made by scholars in this field is that many of the current characteristics of Confucian education traditions are in fact products of a process of evolution that has taken place over two thousand years, and have sometimes become far removed from the original practices from the time of Confucius (Guthrie 2011). Two key aspects are the method of instruction and examinations.

The teaching method used by Confucius was non-formal and personal in character. As can be seen in the classical texts from that era, they followed the format of a student asking Confucius a question, to which Confucius would answer in a manner to induce further reflection and contemplation by the student in order to arrive at the relevant principle (Wu 2011). As such, the "original" Confucius teaching philosophy required the students to actively reflect on the question at hand, and the teacher did not directly provide the correct

answer. Knowledge was not transmitted from the teacher to the student, but rather the teacher scaffolded his teaching according to the student's prior knowledge and abilities (*yin chai shi jiao*; 因材施教) to guide the student to the correct ethical precept. This is clearly far from the present day picture. The ultimate goal of education was the cultivation of the noble, ethical and virtuous person (*junzi*, 君子), thereby promoting social harmony. The Confucian view of knowledge was not a set of facts to be learnt, but rather:

“... a situated intuitive insight that goes beyond the propositional representation. Learning is a process of incessant modification of self, undertaken for the attainment of enlightenment and happiness. And the role of teaching is to detect the horizon of student readiness and make it a handover of a learning opportunity.” (Wu 2011, p. 575)

With time more formalistic and bureaucratic systems of education and examination evolved (Guthrie 2011). The education of children at home and in schools for the ruling classes became highly formalistic and rigid systems involving structured programs involving memorization of classical texts and commentaries. Teachers were not to be questioned, and learning was achieved through repetition and imitation. An evolution had taken place that shifted the philosophical focus from the student gaining insight to knowing accepted truths passed down through the generations.

As the authors of the present study have referred to, the grueling imperial examination system also evolved. This system opened the possibility for social advancement and mobility regardless of birth (though naturally also favored the elite who could afford a classical education: Guthrie 2011). Classical texts from both the time of Confucius and classical Confucian scholars that came after were to be memorized, and essays written according to a strictly defined structure and accepted points of view found in these texts. Fast forward to the present day, it is easy to see the connections to this historical development and how deep this legacy runs within modern Confucian education traditions with regards to the method of instruction and the focus on examinations. There is now a virtual obsession with results in standardized examinations in Confucian education systems such as those in China, Hong Kong, Taiwan, Singapore, Japan and Korea. While cultivating the individual from a moral perspective is still an important goal, as also evident in this present study, there is undeniably also a hunt for credentials as a goal in itself.

It is important to recognize, then, that while one may still cite precepts and teachings from the classical Confucian texts, not all aspects of the educational practices can be traced back to the Confucian teachings. Rather, they constitute the product of over two thousand years of evolution, including influences from other philosophies and ideologies that co-existed even in classical times (e.g. Taoism, Buddhism, Mohism), as well as modern contact with other pedagogical practices from the outside world. As Yongbing Liu (2011) and other writers have pointed out, it is worth remembering that the modern day beliefs and practices attributed to the Confucius tradition are not necessarily the same as those in the days of Confucius. These beliefs have rather been dubbed “vernacular Confucianism”, “to distinguish the Confucianism practiced by the average people from the academic study of classical Confucianism.” (Chang 2000, p. 137). Guthrie has described some aspects of such vernacular Confucianism beliefs, such as:

“... that praise spoils children, scolding builds character, failure results from laziness rather than lack of ability, and learning requires painful effort... Additionally, respect and obedience to superiors, including teachers, was typical, so that questioning a teacher could be considered a sign of disrespect. Traditional Confucian traits that teachers valued in their students included honesty, self-discipline,

respectfulness to parents, responsibility, diligence, humbleness and obedience. Teachers should appear stern, especially with new classes; they seldom praised and provided only limited feedback. Ability was perceived as achievable and dependent on effort through memorisation and repetition.” (Guthrie 2011, p. 181)

As David Watkins and John Biggs (2001) before him, Guthrie also argued that many of the vernacular Confucian beliefs would not be recognizable or endorsed by Confucius, as “[t]he teaching styles based in vernacular Confucian beliefs are not apparently consistent with Confucius’ own approach to higher education, but are more consistent with later Confucian and neo-Confucian approaches to first-level schooling.” (Guthrie 2011, p. 181). As Kai-Ming Cheng (2011) pointed out, during the time of the imperial examination system (also known as “civil examinations”)

“[t]here was little beyond the Civil Examination that could be counted as ‘education’, and there was little in education besides credentials...the purpose of the Civil Examination (i.e. selection of officials) and the motivation of the scholars (i.e. upward social mobility) made real learning for meaning-making almost impossible.” (Cheng 2011, p.594)

In addition, as some of the teachers in the present study have noted, practices justified in the name of Confucian traditions have also been used as an instrument of social control, as opposed to the ideal of cultivating the virtuous *junzi*.

One may ask the question, why does it matter that what is regarded as the Confucian tradition has evolved over time, if it is the current conception, with all the legacy of its development, that is the predominant norm in society? Why should it matter that it is the prevailing, “vernacular” form of Confucianism that the teachers argue the reform-based pedagogy is incompatible with? The answer is that it is vital to realize that the conception of the Confucianism is not, and has not been, immutable. It is instead a set of ideals and practices that is the product of interpretations through centuries of different ideological, political and social contexts. By analyzing more closely what lies behind monolithic labels of “culture” and “tradition” as justification for resistance to change, opportunities are opened up for examining where the real hurdles and difficulties lie, and to what extent context-sensitive and situated solutions can be found to overcome these issues. It is about moving beyond an automatic reaction to explain challenges based on surface differences, and seeing issues that transcend teaching practice irrespective of cultural contexts and legacies. Instead of being hampered by a trump card of tradition or culture, there can be more careful reflection about the how values seen as important to be upheld within a particular education tradition and can be promoted by a range of different pedagogical practices, adapted with regards to local conditions. This approach can help us to move beyond overly simplified views that draw mutually exclusive, one-to-one correspondences between practices and values. We can thereby avoid false dichotomies that apparently put Confucian traditions at odds with reforms in pedagogical practices, resulting in more nuanced discussions and implementation of educational reforms.

Misalignments in practice, professional development and support

While it cannot be denied that various aspects of the Confucian education tradition place challenges on the implementation of the educational reforms in Taiwan, the reflections and observations made by the authors and the teachers in the current study also point to a

number of rather more general issues that transcend the teaching and learning tradition in question. The first issue is a mismatch between the educational goals aimed at by the reforms, and what is tested in the national standardized examinations that are so important within the Taiwanese education system. This is akin to a general problem in a lack of constructive alignment, to use Bigg's model of teaching and learning (see for example Biggs and Tang 2011).

One of the recurring reasons given by the Taiwanese teachers in the currents study as to why many have shied away from adopting the reformed-based pedagogies (or what they understand it to be) is that they felt that the traditional, lecturing-style method of instruction was more "effective" and "efficient". The question here is of course, more effective and efficient to what end? While all the teachers mentioned the importance of bringing up moral and ethical members of society (when prompted to reflect about how Confucian values informed their teaching in the second round of interviews), it was also clear that an overwhelmingly important goal was to ensure that the students achieve the highest possible marks possible in the national standardized examinations. This was evident in the summary of the teachers' remarks, and in particular in the statement by the teacher Zhong that the "teacher's role is to help students earn high scores in exams so that they can pursue successful careers in their lives." The teachers also cited the pressure they experienced from parents demanding that teachers produce students that score highly in these exams. There was also evidence of dissatisfaction and frustration from both students and parents when the teacher could not provide the one "correct answer" when using reformed-based pedagogies. How should the student achieve high scores if they are not told what the correct answers are? A teaching practice that could give the students the correct answers they need in the shortest possible time is presumably also the most efficient and effective.

From the material reported in this study, the teachers clearly experience a conflict here between, on the one hand, the educational reforms that put more emphasis on developing students' critical thinking and inquiry skills, through student-centered and inquiry-based pedagogies, and, on the other hand, the national examinations that would appear from the teachers' comments not to examine such skills. One indication of this is the fact that some teachers specifically point out PISA, rather than the national examinations, as the assessment system that the educational reforms are directed towards. The teachers' comments that "the PISA test *only* tests students' *basic knowledge and skills*... It is *simpler* than... the traditional [national] exams in Taiwan" (Teacher Ren), and that "The PISA test *only* focuses on *basic life skills*..." (Teacher Yi, my emphasis throughout) seem very revealing about the attitudes these teachers have regarding the value of scientific literacy and inquiry skills tested by PISA, and by inference the focus of the national examinations on recall of factual knowledge. There is thus a conflict between the intended outcomes of the educational reforms, and the teachers' own perceived duty to help their students succeed in the national examinations. In making the decision whether or not to change their pedagogy, the fact that PISA is the assessment that specifically tests scientific literacy and inquiry and yet the results do not ultimately affect the students' grades individually in the national examinations probably heightens the perception of the lack of value in the reforms in pedagogy, given the prime focus placed on examination results.

The heavy emphasis of examination results may well be a legacy of the neo-Confucian imperial examinations (and even then, this is not unique among Confucian tradition education systems—see for example the rigorous and extensive French system for preparing and taking the admission examinations into the various elite *Grandes Écoles* at the tertiary level). But a major cause of the resistance to the reform-based pedagogies in the

present study is arguably much more universal, namely the misalignment between the intended learning objectives of the reform-based pedagogy advocated in the educational reform, and the content and form of the national standardized examinations. Without needing to abandoning the examination system altogether, the reforms would likely be more widely accepted if more emphasis were directly placed on the skills aimed at by the reform-based pedagogies.

Another challenge that seems to be hampering acceptance and implementation of the education reforms in the present study is the perceived lack of professional training and development since the introduction of the educational reforms. This is again an issue that is independent of educational traditions. As can be seen from the response of a number of the Taiwanese teachers, they were themselves taught in the traditional manner and were unsure how to teach according to the education reforms. This is no doubt made more problematic as not all the teachers were sure of what the reformed pedagogy really entailed, which is also reflected in the disparate perceptions of the reforms reported in this present study. The fact that the Taiwanese system has moved from a very prescriptive and centralized model with approved textbooks and specific teaching methods, to one where teachers are free to choose amongst different material and pedagogies, has no doubt also contributed to the uncertainty regarding the reforms and difficulties in implementing them. Added to the perceived lack of clarity in the curriculum guidelines, and the apparent shortcomings in communicating the nature and goals of the reforms to parents who take a great interest in their children's school results, it is understandable that many of these Taiwanese teachers felt unprepared and reluctant to change their pedagogical approach. However, while these are clearly problematic issues for the teachers, they are not issues that are specific to the Confucian tradition, but rather a general problem with implementation of reforms that would arise in any system.

Some teachers in the current study commented their feeling of losing control of the classroom and students' learning in their attempts at implementing reform-based pedagogy, and that the classroom dynamic became chaotic. But this is perhaps hardly an unexpected result given that neither the teachers nor the students seem to be prepared for the change in pedagogy. It should be remembered that it is not only the teachers who need to receive training and support in order to be able to successfully implement a new pedagogy and to handle the different classroom dynamics and student responses that would inevitably result. Students who have been brought up on the traditional, lecture-style pedagogy also require time and experience to adjust to this. An example of this can be seen in the study of Simon Gieve and Rose Clark (2005) that studied the response of Chinese and European undergraduate students taking English courses in the UK, where they questioned whether students' learning approaches really were culturally determined, or were they rather more dependent on the immediate social context, such that "a 'Chinese culture of learning' would be seen not so much as *the way they do things in China*, as *the way learning takes place in contexts often found in China*" [emphasis in the original, p. 274]. A quote from one Chinese student's reflections on their exposure to more the autonomous style of learning in that course is particularly revealing, yet at the same time unsurprising:

"Chinese teachers always do a lot of works to impart their students knowledge directly, but English teachers prefer to do works on heuristic method teaching, they try to guide the students to get most knowledge by themselves... I didn't adapt this kind of teaching methods very well when I began my study in our university firstly, I was still waiting for the teachers imparting knowledge to me directly, so I wasted a

lot of time and lost my direction of my academic study at first... After a period study, I found that I was backward some European students, so I began to study hard by myself.” (Gieve and Clark 2005, p. 267)

The “ground rules” in the relationship and division of responsibility between the teachers and the students need to be renegotiated, and the teaching and learning practices require time for adaptation and adjustment (see also Chan 2008). This takes time but it is by no means impossible, as another student reflection in the study by Gieve and Clark (2005) shows:

“By self-study and tandem learning I also know a good way to receive knowledge. Before it I just received knowledge from teacher, after do it I can direct to study knowledge by myself. So after university study I can study without teacher.” (p. 268)

An interview study of Hong Kong students and teachers (Law, Yuen, Chan, Yuen, Pan, Lai, et al. 2010) who have experienced the newer reformed-based pedagogies have also discussed and explored the process of adaptation required in changing pedagogies. It has shown also the many positive responses to these changes and the process of evolution in students’ and teachers’ perceptions of their respective roles in student learning, whilst operating in the Confucian educational context.

In summary, while the (neo-)Confucian legacy certainly contributes to the preferences for traditional methods of instruction and the major importance placed on examination and examination results, the reluctance to adopt reform-based pedagogy reported in the present study arguably stems also to a significant extent from more general and tradition non-specific factors. The issues faced by the teachers would have been problematic regardless of the educational tradition in question. Improved professional training and communication of the educational reforms, coupled with reform of the requirements of the national examinations to reward student achievement in line with the learning objectives such as scientific inquiry and critical thinking might well help to increase implementation of the reform-based teaching practices.

Looking for convergence and possibilities

The comments and discussion above are not meant to imply some inherent superiority of non-lecture based or “Western-style” pedagogies. Rather, it is an attempt to scratch deeper beneath the surface and avoid immediately attributing the apparent lack of widespread uptake of the education reforms to their being inherently incompatible with the Confucian education tradition. In fact, there are aspects of Confucian tradition cultures that can arguably provide very favorable preconditions for implementation of more student-centered and inquiry-based pedagogies advocated by the education reforms. In this context, it is also important to recognize some perceived though false dichotomies concerning such pedagogies and the traditional pedagogies favored in Confucian cultures.

Social interaction between learners is a key part of the constructivist view of learning, where learners cooperate to help each other construct meaning and gain deep understanding of the subject matter. It is the basis of many student-centered pedagogies involving inquiry, group discussions, peer-instruction etc. In this regard, the more collectivist nature of Confucian cultures can be an advantage in the use of such teaching methods. Collaborative work in the classroom aimed at a common goal and mutual benefit of all the students involved, and a sense of collective responsibility for the learning and

achievement of the whole class would fit very naturally with societal ideals in the Confucian context. Studies of students in Hong Kong have suggested such positive effects of the more collectivistic attitude nature of Chinese society being conducive to collaborative learning, even where there is competition between students (Watkins 2010). Rather than being antagonistic to collaborative learning, competition was not necessarily seen by the students as polar opposites, but could create motivation for learning. Even against the backdrop of the all-important examinations, students and teachers perceived benefits of collaborative learning (Chan 2010).

Another set of personal characteristics valued by the Confucian tradition that can be conducive to the use of more student-centered and inquiry-based pedagogies is the notion of hard work, perseverance and resilience, even in the face of setbacks and hardship. This can be seen in the comments by the teachers in the present study and has also been studied by scholars such as Jin Li (2010). As Li has discussed in an interesting investigation of Chinese learners' views on learning and its connection to the idea of perfecting oneself socially and morally in the process, there is an expectation that learning will entail difficulties, failure, and hardship. It is however also part of the whole learning process and character-building, and those who persist and overcome such hurdles will ultimately be rewarded with success and self-improvement. A study of American and Chinese students found that American students were more likely to attribute success or failure to innate ability or lack thereof, whereas Chinese students were more likely to point to amount of effort as the cause of success or failure (Yan and Gaier 1994). This correlates well with another study of Hong Kong students who ranked effort as the most important factor for academic success, with (innate) ability only coming fifth, after other factors such as interest and study skills (Hau and Salili 1991). Such attitudes towards learning arguably provide very favorable preconditions for implementation of student-centered and especially student-driven learning activities where inquiry and one's own construction of meaning and understanding is particularly emphasized. These activities can require more effort and perseverance from students than more receptive modes of learning, as it is often more uncertain how the student should approach the task at hand and what the outcome or answer would be. Far from being antagonistic to Confucian values, student-centered learning activities could be harnessed to develop students' diligence, self-reliance and persistence in contexts that additionally could enhance their inquiry and critical thinking skills.

Indeed, Lijing Shi (2006) presented a very interesting table (at p. 126–127) comparing what can be regarded as a stereotypical perception of what Confucian education advocates (drawn from Hu (2002)) and translated precepts taken from *The Analects*. This comparison highlights that there are in fact many parallels between the education approach found in the original Confucian philosophies of learning and the modern ideas concerning student-centered and inquiry-based pedagogy. In particular, two quotations from *The Analects* reveal how the notion of memorization of facts without question and an aversion to critical thinking are not part of some essence of the Confucian school of learning in its original form:

(1) *xue er bu si ze mang, si er bu xue ze da* (學而不思則罔思而不學則殆): "Learning without thinking leads to confusion; thinking without learning is dangerous"

(2) *bu fen by qi, bu fei bu fa. Ju yi yu bu yi san yu fan, ze wu bu fu ye* (不憤不啟, 不悱不發。舉一隅不以三隅反, 則不復也。): In essence, that the teacher (Confucius)

will not help the student to deduce or understand something unless he has tried his very best but still failed.

As Shi (2006) further points out, research studies of Chinese students suggest that “the differences between Chinese learners and Western learners are subtle rather than polar”, and certainly there is ground to argue that many of the reform-based pedagogies are aligned with the original Confucian ideas of learning.

It is important in analyzing pedagogies and education traditions to avoid falling into the trap of setting up false dichotomies and causal connections. One such false dichotomy is that the Confucian tradition is only teacher-centered, whereas only reform-based pedagogies are student-centered. As discussed above, Confucian values have not been immutable, and interpretations of what they entail are not universal. In considering the different explanations the Confucian education tradition given by the teachers in the present study, one is struck by the interesting divergence in emphasis in their explanations. There even seems to be parallels to the spectrum across the teacher-centered and learner-centered approaches that are contrasted in the current study by Huang and Asghar. As can be seen in the summaries in Table 3, teachers Zhong, Ting, Jing and Bao focused essentially on the societal expectations and goals for the greater good. Students, while mentioned directly, are more of an anonymized group in the achievement of these goals rather than as particular individuals. Compare this to the descriptions summarized for teachers Hei, Yi, Xiao, Ren and Chang. Their explanations regard the student more as individuals and as the subject of the education. The principles of *ying cai shi jiao* or *you jiao wu lei* (有教無類; education without discrimination for all who are willing to learn) cited by some of these teachers are furthermore similar and relevant to the concepts of scaffolding in student-centered pedagogies, a point that the teacher Xiao also specifically commented on. As such, we seem to see here an interesting spectrum in emphasis and nuances in the conception of the Confucian tradition that has room for both teacher-focused and student-centered approaches to pedagogy. So, even though one might be tempted to conceptualize the Confucian tradition as being synonymous with the teacher-centered approach and incompatible with student-centered methods, these teachers' comments point to a more subtle picture. This can also be seen in the summary presented in Table 2, where there is a continuum of teachers' perceptions. There is not a clear-cut, black-and-white dichotomy between traditional and student-centered approaches that the teachers have to “straddle”, but rather some teachers do also see the value of student-centered approaches even within the frameworks of the Confucian education tradition.

There is room for implementation of the education reforms, with adaptations having due regard to the local conditions. Indeed, scholars have questioned the supposed teacher versus student-centered dichotomy. Researchers such as Carol Chan (2008) have argued that in the Chinese context there are examples of transformations in teaching practices that combine both “teacher-centered” and “student-centered” approaches, and there are examples of the creation of a “third space” (Tsui and Wong 2010) or “middle way” (Wong 2008) between these conceptual extremes of teaching practices (see also critique of the simple “memorization = surface learning” connection in the Confucian education tradition, with scholars suggesting the existence of a “memorization-understanding” process in the Chinese context: reviewed in Rao and Chan, 2010). Even in this study here, we find that the teachers Xing and Ren have made efforts to find a “middle ground” to combine both inquiry-based and tradition teaching strategies. There is room for adopting pedagogical reforms with adaptations with regard to local traditions and expectations, and Alex Baron and Hsiao-Lan Sharon Chen (2012) have also presented a case study of a Taiwanese

teacher who has successfully navigated within and to some extent beyond the local educational culture to implement pedagogical innovation. It is crucial to remember that the transformation and evolution of teaching practices and philosophies are not about transplanting pedagogies and methodologies directly from one context to another. Just as the wholesale implementation of the tough and highly competitive university entrance examination system to Western countries is unlikely to lead to vastly improved PISA results, implementation of teaching practices more commonly used in the West must also have regard to the local education traditions (Li 2010).

Analogously, observed differences in teaching practice and student behavior should not be wholesale attributed to a Confucian-versus-Western dichotomy either. Other factors such as socio-economic factors (Tao, Oliver and Venville 2013), as well as the individual teacher's and student's attitude and motivations also come into play (Chan and Rao 2010). Ying Tao and co-workers (2013) found, for instance, that while the Australian schools taken as a whole did adopt student-centered learning activities more than the Chinese schools studied, this was not simply or exclusively a clear-cut East–West division. In both countries there was also a tendency to employ student-centered learning activities in schools with a higher socio-economic status. As Rose Clark and Simon Gieve (2006) have argued, research into learners in the Chinese/Confucian tradition “would do well to get away from explanations and understandings based on reified, abstracted and frozen conceptions of culture. For one thing, such generalisations hide as much as they reveal and, in reducing individuals to inadequately understood group characteristics...” As in any system, students are far from homogenous. There is clearly a need for nuanced approaches that tries to tease out and understand the diversity in attitudes, internal and external motivations, socio-economic and specific cultural backgrounds, as well as aspiration and goals of the learners, whatever the education tradition (Cheng and Wan, 2016).

Even the goals of the reform-based pedagogies require deeper consideration and conceptualization. An example is the goal of enhancing students' critical thinking skills. It is something that some teachers in the present study pointed out as lacking in the Confucian tradition pedagogy as it is understood in Taiwan today, but also an aspect where some teachers in this study identify as being incompatible with the Confucian tradition classroom. What the notion of “critical thinking” encompasses is far from straightforward, and has been conceptualized in many different ways (Brodin 2007). What is clear though is that critical thinking is not synonymous with simply being negative or finding fault. But from the teachers' responses here, there seems to be a tendency to equate “critical” with “negative critique”. For example, the teacher Ting was quoted as stating that a problem with the new pedagogy would be that “[a] student would have to constantly consider whether others would criticize your action or [*sic*] interrupt the class to raise questions, as well as expressing different ways of thinking”, the teacher Ying spoke of the fact that “few students dare to challenge their teachers or raise questions in class”, and the teacher Hei thought that the Confucian tradition has led to students being “afraid of challenging traditional norms and constructs”. There is clearly a need for a broader understanding of what critical thinking as a cognitive skill encompasses, to avoid its being viewed with such suspicion. This can be in part traced back again to the neo-Confucian view of the purpose of learning and the role of the teacher:

“The development of Confucian thought on teaching during the 3rd century BC by the second great Confucian philosopher, Mencius (Mengzi), stressed that the role of a teacher was to identify the most talented individuals and teach and nourish them. The teachers' job was to present ethical precepts rather than advocate critical thinking.” (Guthrie, 2011, p. 179)

Again, the shift away from the original Confucian view on learning and teaching can be seen. The point here is not to say that the original Confucian ideals are the only correct ones, but rather that evolution of these philosophies have taken place. It should then also be possible to continue to “reimagine” the interpretations of Confucian ideals in the classroom to accommodate a transition to practices involving a more student-centered approach, situated in the society in which the education system is found. For instance, a key value in Confucian heritage cultures is the respect of authority and acceptance of the wisdom of elders. But what is this wisdom of elders? It must be in both knowledge and attitude, and indeed this would not be a foreign idea looking back to the “original” Confucian approach of the teacher guiding the student to insight and understanding through student-initiated questions and reflections. Engaging in respectful evaluation and consideration of the statement of teachers does not have to be an anathema to the virtue of respect within a Confucian context. The virtue of wisdom does not necessarily have to be restricted to knowing without question some pre-established “truths”, but can also extend to the capacity to reflect upon and if necessary defend or reevaluate them if necessary. This does not have to be antagonistic to the goal of social harmony, as long as one does not mean by this absolute social homogeneity in thought and action. Understanding the broader implications of one’s stance and conceptions for the collective can be conceptualized as a duty of the individual, where he or she should apply his/her critical mind to strive to improve society with due consideration for others.

Concluding remarks

Educational policies that aim to reform long standing practices and attitudes are by no means easy to implement and achieve wide acceptance. This is especially so where the changes are perceived to go against deeply held cultural values and beliefs. As mentioned above, the aim of this present commentary has not been to be an apologetic for Western-style teaching practices or learning goals, but rather to advocate for a more nuanced approach in considering the education reforms that go beyond surface differences in educational traditions. By looking more carefully at the origins and evolution of beliefs and attitudes, delving into possibilities for convergence and favorable points of departure, it is hoped that with time there will be cross-fertilization of ideas that can improve students’ learning and experiences, regardless of the traditions in which the educational system in question is situated.

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References

- Baron, A., & Chen, H.-L. S. (2012). Looking in a science classroom: exploring possibilities of creative cultural divergence in science teaching and learning. *Cultural Studies of Science Education*, 7, 93–101. doi:10.1007/s11422-012-9402-6.

- Biggs, J., & Tang, C. (2011). *Teaching for quality learning at university*. Maidenhead: Open University Press.
- Brodin, E. (2007). *Critical thinking in scholarship: Meanings, conditions and development* (2007) PhD thesis, Lund University, ISBN: 978-91-628-7114-7.
- Chan, C. K. K. (2008). Pedagogical transformation and knowledge-building for the Chinese learner. *Evaluation & Research in Education*, 21, 235–251.
- Chan, C. K. K. (2010). Classroom innovation for the Chinese learner: Transcending dichotomies and transforming pedagogy. In C. K. K. Chan & N. Rao (Eds.), *Revisiting the Chinese learner: Changing contexts, changing education* (pp. 71–88). Hong Kong: Springer.
- Chan, C. K. K., & Rao, N. (2010). The paradoxes revisited: The Chinese learner in changing educational contexts. In C. K. K. Chan & N. Rao (Eds.), *Revisiting the Chinese learner: Changing contexts, changing education* (pp. 315–350). Hong Kong: Springer.
- Chang, W. C. (2000). In search of the Chinese in All the Wrong Places! *Journal of Psychology in Chinese Societies*, 1, 125–142.
- Cheng, K. D. (2011). Pedagogy: East and west, then and now. *Journal of Curriculum Studies*, 43, 591–599. doi:[10.1080/00220272.2011.617836](https://doi.org/10.1080/00220272.2011.617836).
- Cheng, M. H. M., & Wan, Z. H. (2016). Unpacking the paradox of Chinese science learners: Insights from research into Asian Chinese school students' attitudes towards learning science, science learning strategies, and scientific epistemological views. *Studies in Science Education*, 52, 29–62. doi:[10.1080/03057267.2015.1112471](https://doi.org/10.1080/03057267.2015.1112471).
- Clark, R., & Gieve, S. (2006). On the discursive construction of 'the Chinese learner'. *Language Culture and Curriculum*, 19, 54–73. doi:[10.1080/07908310608668754](https://doi.org/10.1080/07908310608668754).
- Gieve, S., & Clark, R. (2005). 'The Chinese approach to learning': Cultural trait or situated response? The case of a self-directed learning programme. *Systems*, 33, 261–276. doi:[10.1016/j.system.2004.09.015](https://doi.org/10.1016/j.system.2004.09.015).
- Guthrie, G. (2011). Formalistic traditions in China. In G. Guthrie (Ed.), *The progressive education fallacy in developing countries: In favour of formalism* (pp. 173–193). New York: Springer.
- Hau, K.-T., & Salili, F. (1991). Structure and semantic differential placement of specific causes: Academic causal attributions by Chinese students in Hong Kong. *International Journal of Psychology*, 26, 175–193. doi:[10.1080/00207599108247885](https://doi.org/10.1080/00207599108247885).
- Hu, G. (2002). Potential cultural resistance to pedagogical imports: The case of communicative language teaching in China. *Language, Culture and Curriculum*, 15, 93–105. doi:[10.1080/07908310208666636](https://doi.org/10.1080/07908310208666636).
- Law, N. W. Y., Yuen, A. H. K., Chan, C. K. K., Yuen, J. K. L., Pan, N. F. C., Lai, M., et al. (2010). New experiences, new epistemology, and the pressures of change: The Chinese learner in transition. In C. K. K. Chan & N. Rao (Eds.), *Revisiting the Chinese learner: Changing contexts, changing education* (pp. 89–132). Hong Kong: Springer.
- Li, J. (2010). Learning to self-perfect: Chinese beliefs about learning. In C. K. K. Chan & N. Rao (Eds.), *Revisiting the Chinese learner: Changing contexts, changing education* (pp. 35–70). Hong Kong: Springer.
- Liu, Y. (2011). Pedagogic discourse and transformation: A selective tradition. *Journal of Curriculum Studies*, 43, 599–606. doi:[10.1080/00220272.2011.584564](https://doi.org/10.1080/00220272.2011.584564).
- Rao, N., & Chan, C. K. K. (2010). Moving beyond paradoxes: Understanding Chinese learners and their teachers. In C. K. K. Chan & N. Rao (Eds.), *Revisiting the Chinese learner: Changing contexts, changing education* (pp. 3–34). Hong Kong: Springer.
- Shi, L. (2006). The successors to Confucianism or a new generation? A questionnaire study on Chinese students' culture of learning English. *Language, Culture and Curriculum*, 19, 122–147. doi:[10.1080/07908310608668758](https://doi.org/10.1080/07908310608668758).
- Tao, Y., Oliver, M., & Venville, G. (2013). A comparison of approaches to the teaching and learning of science in Chinese and Australian elementary classrooms: Cultural and socioeconomic complexities. *Journal of Research Science Teaching*, 50, 33–61. doi:[10.1002/tea.21064](https://doi.org/10.1002/tea.21064).
- Tsui, A. B. M., & Wong, J. L. N. (2010). In search of a third space: Teacher development in mainland China. In C. K. K. Chan & N. Rao (Eds.), *Revisiting the Chinese learner: Changing contexts, changing education* (pp. 281–314). Hong Kong: Springer.
- Watkins, D. A. (2010). Motivation and competition in Hong Kong secondary schools: The students' perspective. In C. K. K. Chan & N. Rao (Eds.), *Revisiting the Chinese learner: Changing contexts, changing education* (pp. 71–88). Hong Kong: Springer.
- Watkins, D., & Biggs, J. (Eds.). (2001). *Teaching the Chinese learner: Psychological and pedagogical perspectives*. Hong Kong: Comparative Education Research Centre, University of Hong Kong.
- Wong, N.-Y. (2008). Confucian heritage culture learner's phenomenon: from "exploring the middle zone" to "constructing a bridge". *ZDM*, 40, 973–981. doi:[10.1007/s11858-008-0140-x](https://doi.org/10.1007/s11858-008-0140-x).

- Wu, Z. (2011). Interpretation, autonomy, and transformation: Chinese pedagogic discourse in a cross-cultural perspective. *Journal of Curriculum Studies*, 43, 569–590. doi:[10.1080/00220272.2011.577812](https://doi.org/10.1080/00220272.2011.577812).
- Yan, W., & Gaier, E. L. (1994). Causal attributions for college success and failure: an Asian–American comparison. *Journal of Cross-Cultural Psychology*, 25, 146–158.

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