

The challenge to transform learning: Changing teachers' theory of teaching

Lim Chong Hin¹, Nagendralingan Ratnavadivel², Sopia Md Yassin², Noor Shah Saad²,
Rajendran Nagappan² and Idris Md Radzi²

¹Taylor's University, Malaysia, ²Sultan Idris Education University, Malaysia

There is widespread concern in Malaysia about the quality of learning experienced by students, and the approach to learning they develop as a consequence. The approach is generally marked by memorization of information as isolated facts and does not promote understanding or long-term retention of knowledge and information. Despite a number of large-scale, centrally-driven reform efforts to change the status quo, they have for the most part met with little success. Based on the data collected as part of a nation-wide study to investigate the way teachers make pedagogical decisions, this paper argues that one major challenge to transform students' approach to learning is changing the way teachers think about teaching which past reform efforts have largely ignored. The data suggest that the teachers studied mainly see teaching as transmitting information from teacher to the student. In this view of teaching they hold, they focus their attention on the differences between students to explain differences in learning. Learning is therefore not seen as more a function of what the teacher does than what a student is. This means, unless their view of teaching is challenged, their teaching is unlikely to change to be more responsive and supportive of student learning. The data for this study was collected through qualitative approaches involving interviews and classroom observation. The findings of the study have wide implications in planning professional development courses for teachers to transform the way students learn.

Key words: Educational reform; surface learning; deep learning; teacher's theory of teaching; transforming learning.

Introduction

The concerns for the quality of learning

Concerns about the quality of learning provided by educational institutions, and the urgent need to transform it, be they focused at school or tertiary level, are concerns about the outcomes of learning, and correspondingly to a large extent concerns about the quality of teaching taking place in where it happens the most: the classrooms (Biggs & Tang, 2007; Dee Fink, 2003; Gardner, 2006). The concerns are nothing new. Ever since

educational institutions are expected to deliver and make good what are conceived to be their primary objectives, justified or otherwise, the concerns have been an ongoing and persistent phenomenon, albeit the reasons underpinning them have not all stayed the same, buffeted by the changes in the world of which they are an essential part of.

The phenomenon is also universal; it is neither the province of any one particular country, geographical area or economic region, nor the confine of any specific constituency. Politicians of all persuasions, knowing education is close to the heart of voters, have made its state as one of the centre pieces of their campaign (before proceeding to lay out what they will do in power), the men and women in the street have given their take on it (before going on to explain why it is the case and what should be maintained and what should be rectified), and even teachers and academics themselves, the supposed guardian of quality have seen it fit to get into the act (before advancing to justify how much more challenging their task is given the situation). And, why not, for much is at stake, and the extent of the stake is not confined to the economic sphere alone although it seems to be the most talked and heard about these days.

Various actors at various levels of society have also used myriad of metaphors and phrases to describe these concerns, picking their choice of metaphors and calibrating their choice of words on the degree of impact they wanted to have and the scale of urgency they sought to convey on their intended audience on the need to stay the course or make the changes to the status quo they deemed necessary. For instance, nearly three decades ago, the American President at the time, Ronald Reagan, famously used the widely criticized war metaphor to encapsulate this concern:

If an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war. As it stands, we have allowed this to happen to ourselves. We have even squandered the gains in student achievement made in the wake of the Sputnik challenge. Moreover, we have dismantled essential support systems which helped make those gains possible. We have, in effect, been committing an act of unthinking, unilateral educational disarmament (National Commission on Excellence in Education, 1983, p.5).

In contrast, without the soaring rhetoric of politicians but much more grounded in the reality of the classroom and more in tune with the way teachers teach and students learn, Biggs and Tang (2007), following Martön and Säljö (1976), invoke the notion of deep and surface learning to put their points across. They used the story of 'Making Robert like Susan' to highlight their concerns about the way students, specifically in higher education, approach their learning:

In the lecture, [Susan who adopts a deep approach to learning] ... finds an answer to a preformed question; it forms the keystone for a particular arch of knowledge she is constructing. Or it may not be the answer she is looking for and she speculates, wondering why it isn't. In any event, she reflects on the personal significance of what she is learning. ... Robert [who approaches his learning in a surface manner] hears the lecturers say the same word as Susan is hearing but he doesn't see a keystone, just another brick to be recorded in his lecture notes. He believes that if he can record enough of these bricks and can remember them on cue, he'll keep out of trouble come exam time. ... Students like Robert are in higher proportion in today's classes (Biggs & Tang, 2007, p.9).

In Malaysia too, concerns about the quality of learning are very much in evidence and very much in the limelight. The National Economic Advisory Council (NEAC), for instance, in proposing a 'New Economic Model for Malaysia' expressed this disquiet by way of stressing the urgency to "[r]eview the education system – shift educational approach from 'rote learning' to 'creative and critical thinking' "(NEAC, 2010, p.123) as one of the critical measures that needs to be put in place if Malaysia's economy is to be transformed into a high-income one from its current long-standing middle-income status. To be sure the NEAC is neither the first nor the only body to voice the concerns. The Malaysian Ministry of Education itself is aware of the need to improve the quality of student learning by transforming the way the students approach their learning (Kementerian Pelajaran Malaysia, 2006). And, students in Robert's mould are also not uncommon in Malaysia. This point is illustrated well enough by these two instances:

First, a history teacher's observation of how her students learn the subject:

... students view history as a difficult subject because it involves memorization of dates, events and all kinds of facts and this means extra reading. In terms of learning, students largely depend on the teachers. ... They cannot differentiate important point when writing notes from the textbooks or when listening to what the teacher teaches. They are very much dependent on the guidance of teachers ... (Ratnavadivel et al., 2008, p.242).

Second, a student's (Fauziah) explanation of how she solved a mathematics problem:

Fauziah works out the solution to the problem, $27 \times 5 = \underline{\quad}$, with apparent ease the following way:

$$\begin{array}{r} 3 \\ 27 \\ \underline{\times 5} \\ 135 \end{array}$$

She explains that 13 (in 135) is obtained by $(2 \times 5) + 3$.

R: What if I add first before multiplying [i.e. $(3+2) \times 5$]?

F: Don't feel it can be done.

R: Why must you multiply first?

F: If we add first and then multiply (pause). Teacher has never taught [us that]

R: Oh ?

F: Teacher taught us to multiply first and then add. That's how he taught [us]

R: If teacher has taught Fauziah to add first before multiplying, can the method be accepted?

F: Can [Yes].

R: Can the method lead to a correct answer?

F: Can [Yes].

(Lim, 2008)

Fauziah's case is particularly telling given that she is considered by her teacher to be a top student in mathematics in her class which is also a top class as the school practices streaming or tracking. In the problem she was asked to solve, her approach to learning necessitates her committing to memory the sequence of what she has to do to obtain the right answer, that is to multiply 2 in the ten column and 5 in the unit column first (that is, 2×5) before adding the 3 tens (that is, $(2 \times 5) + 3$) regrouped from multiplying 7 and 5 (that is, 7×5) in the unit column. And, it seems obvious she does not know why she needs to multiply first before adding. If she were taught to add the tens first (that is, $2 + 3$) first before multiplying (that is, $(2 + 3) \times 5$), she would have accepted it as the right way to obtain the right answer.

Given that Fauziah is considered to be a top student, one can only imagine how the rest in her class approach their mathematics' learning. And, there are many like her, not just in the way they approach the learning of mathematics but that of other subjects as well (Nagappan et al., 2007; Ratnavadivel et al., 2008). Learning by rote is pervasive in Malaysia, and it extends to higher education too. As a Reuter report (Chance, March 18, 2010) highlighted, "[a]t present, it [Malaysia] turns out tens of thousands of graduates a year who learn by rote and are ill-equipped for the new economy". To be sure, a number of times in the past, Malaysia had tried in a big way to change the way its teachers teach and its students learn but so far these reform efforts, despite the heavy investment involved, have met with little success that is of significance. The change that matters – the teachers' approach to teaching and students' approach to learning – has essentially not happened (Nagappan et al., 2006; Ratnavadivel et al., 2008).

The persistence of rote learning is therefore not for the want of trying to change the status quo. Thus, while the NEAC may exhort the need to transform learning, making a success of it is another matter. For Malaysia, the challenge to transform learning in its educational institutions lies on many fronts, but one of the most if not the most critical is in changing the classroom practice of its teachers through creating conditions that are not only conducive to such change but also build and strengthen the teachers' capacity to change.

The Way The Teachers Teach – What The Literature Says

Teachers, specifically the approaches they adopt in teaching, play a critical role in shaping the approaches students take to learning (Biggs & Tang, 2007, Darling-Hammond, 1999; Prosser & Trigwell, 1999). The teachers' approaches to teaching in turn depend on a host of factors (Shulman, 1992). A highly influential one is what the teachers think teaching is all about. All teachers, as Gow and Kember (1993) argue, have some theory of what teaching is, and this is implicit in the way they teach, even if they are not consciously aware of the theories they hold. More importantly, their theories profoundly affect the kind of learning environment they create in their classrooms which has a particularly telling effect in shaping the approaches students take to learning.

Of the theories of teaching that teachers hold, they can be grouped into three common categories, and which category a teacher belongs to tend to depend on their level of development as a teacher: Level 1, 2 and 3 (Biggs & Tang, 2007). Level 1 teachers train their attention on the differences between students: there are good students (like Susan) and poor students (like Robert). They focus their attention on what the student is. This point is crucial. The way these teachers see it, their primary responsibility is to be the knowledgeable expert, the sage on the stage by knowing the content well and expounding it clearly. Thereafter it is the student's responsibility to come to class, to pay

attention, to listen carefully, to take notes and so forth; in a nutshell it is solely a student's responsibility to make sure what is taught to him or her is taken on board and, when assessed, to report back what is taught in the manner it is expounded. In short, to declare back to the teacher what is declared to him or her by the teacher. From the perspective of Level 1 teachers, good students do this, poor students do not.

Effectively therefore teaching at this level is held constant: teaching is viewed as transmitting information from the teacher to the student. This view comes with one big and dire consequence: the differences in learning are attributed to the differences between students: in terms of their ability, motivation, effort, ethnicity, and so on. And, among these, ability is usually regarded as the most important factor. As a result, assessment is seen through a sorting lens: to sort the good students from the poor ones after the teaching is over. And what about the curriculum? It is principally seen as a list of content to be covered. Students' learning experiences do not come into the picture and being reflective is totally out of the question for teachers at Level 1. Consequently, their teaching is unlikely to change. They feel at home with their the-student-is-at-fault theories of teaching.

What about Level 2 teachers? Unlike Level 1 teachers, they focus on what they themselves do but, as with Level 1 teachers, their view of teaching is still very much defined by the notion of transmission. The principal difference is that they see their role as more than just information: they transmit concepts and understanding too (Prosser & Trigwell, 1998). And, they even entertain the possibility that there might be more effective ways of teaching than the ones they prefer and currently using. Thus they are more open to learning and equipping themselves with new ways of teaching. To that extent, they are reflective. This is a big step forward as learning is seen as more a function of what the teacher does than what the student is. But, Level 2 theories of teaching, as with Level 1's are still deficit-underpinned theories although the deficit is now loaded onto teachers rather than students. Level 2 theories are the-teacher-is-at-fault theories of teaching as opposed to Level 1's the-student-is-at-fault theories.

Now we come to the Level 3 theory of teaching. Teachers at this level focus on what the student does and connects it to teaching. This shift in focus is critical as it puts learning at the heart of the matter with teaching playing a supporting role. At this level, there is therefore an ongoing conversation of sort between what the student does and what the teacher does. The two is seen as intertwined. And, being reflective is very much part of the equation. Biggs and Tang (2007, p.19) explain Level 3 theories of teaching this way:

Level 3 is a student-centred model of teaching, with teaching supporting learning. No longer is it possible to say: 'I taught them but they don't learn.' Expert teaching includes mastery over a variety of teaching techniques, but unless learning takes place, they are irrelevant; the focus is on what the student does and on how well the intended learning outcomes are achieved. This implies a view of teaching that is not just about facts, concepts and principles to be covered and understood but also to be clear about:

1. *What it means to 'understand' content in the way that is stipulated in the intended learning outcomes.*
2. *What kind of teaching/learning activities are required to achieve those stipulated levels of understanding.*

The shift in how teaching is seen in Level 3 theories of teaching is profound. What is important is not so much what the teachers do but what the students do. In a reverse way, this puts the onus on the teachers to be clear about what they want their students be able to do at the end of their teaching, and to craft a learning environment that makes it likely for students to achieve it.

A key point is that Level 3 theories of teaching is based on a constructivist theory of learning which essentially says that learners construct knowledge with their own activities, using and building on what they already know. Teaching therefore is not a matter of transmitting, but crucially of engaging students in active learning, helping them to build their knowledge in terms of what they already know. This implies that effective learning changes the way the students see the world as what they know is reorganised. Biggs and Tang (2007, p.21) put it this way, "... *education is about conceptual change, not just the acquisition of knowledge*".

From the argument so far, what all these three levels of theories of learning entail is this: Teachers who hold theories of teaching at a higher level are more likely to promote a deep approach to learning in their students, influencing them to engage in meaningful learning, to work at connecting ideas and seeing the big picture so to speak. Conversely teachers at a lower level are less liable to do so but instead more likely to promote surface learning, to influence students to approach their learning more like Robert's than Susan's, to lead them down the path to rote learn what is taught rather than work towards understanding, to commit to memory isolated facts, to cut corners in approaching a task and so on (Biggs & Tang, 2007). Students who approach their learning this way are unlikely to see the wood for the forest. In other words, if student learning in educational institutions were to be transformed to look more like the way Susan approaches her, then more Level 3 teachers are needed. Given these three levels, at which level are the teachers mostly, specifically Malaysian teachers? This is where we turn to next.

Malaysian Teachers' Theories of Teaching.

A few years ago, a group of local researchers conducted a large-scale, nationwide, mixed approach, government-funded study on Malaysian secondary teachers, investigating factors that played a significant role in structuring their pedagogical decisions (Nagappan et al, 2006). A substantial part of the study involved the researchers spending time in the classroom, observing how the teachers teach, and asking them why they teach the way they did. They came up with a number of important findings. However, they did not examine the data through the lens of the levels of the theory of teaching of the teachers mentioned in the previous section. Here's a sample of the typical qualitative data they collected:

From two mathematics teachers:

Now I am rushing through the syllabus. ... It does not matter if the students understand or not. Syllabus not complete, feel unsatisfied. ... I think if we want to really make sure they [objectives] are met, we can't do that too because in this school, we [mathematics teachers], have to ensure that the syllabus is completed, meaning if 50% [of the students] understand [what we have taught, we feel that the objectives are met (Nagappan et al., 2006, p.140).

My students are weak. That's why I teach [the topic histogram] like that [students copying the solutions written on the white board by the teacher]. ... [My students] basic [are] weak. Fractions, weak. Don't know which one is the x-axis and the y-axis. ... You give homework, they don't do, say they don't know. ... You must supervise them closely. (Nagappan et al., 2006, p.141).

From three English language teachers:

... when we come to Form 4 and 5 which we have very basic skills, very basic literature; not this level of literature where the students half of them don't even know what is going on in the class, and read they don't even read. ... So if they [the students] don't do their part then it becomes a stress the teachers. ... We have to spoon-feed them. We have to give them every answer for everything ... They are not motivated to think for themselves (Nagappan et al., 2006, p.129).

They're very dependent on the teachers. You tell them to do ... and you stand there beside them ... they won't do. You have to stand there. You have got to tell them, "Okay, take this ...", then they do it. You turn your head, then they will be missing ... gone in action, something like that. That's our type of students. (Nagappan et al., 2006, p.111).

I think this method [expository method] is the most suitable ... because I think before something can be done, we must explain first so that students can understand. ... Because to me, explanation, before students can do the exercises, we need to explain so that students understand. If we don't show the students, they won't know. So, we show them one by one, step by step. (Nagappan et al., 2006, p.143).

From five science teachers:

By right, the students should read first to understand the ideas that the teacher is going to teach. If the students already have the ideas, whenever they do not understand, they could then ask the teacher. It will be easier for them to ask if they already have the ideas. Students do not ask questions because they are not ready. It should be that way. The students must be ready when they come to school. In class they need to listen to the teacher, try to understand what the teacher is teaching. If not, ask and revise at home. (Nagappan et al., 2006, p.153).

You provide them with the answer [to the experiment] first, then only make the students do the experiment. Theory first, that's it. I think this is the approach. Explain first, then they have it. ... Then only they do the experiment, to prove it [the theory]. ... At least [this way] they know the results (Nagappan et al., 2006, p.155).

In the practical [lab] class today, the students will copy it [what the teacher has prepared] into their books. In the planning stage [for the experiment], I will assist them in writing the procedures [for the experiment], give them the sentences. Everything have to be given, if not, they do not know anything. ... Empty. It will take 20 minutes for them to copy this. (Nagappan et al., 2006, p.158).

There is nothing that we can do because even after explaining several times, they still cannot understand. ... Normally, I just don't do anything about it. ... Several times, I repeat it [the explanation] ... Repeat and repeat and they still don't get it. ... They just refuse to remember anything. (Nagappan et al., 2006, p.163).

We have no choice. The rote learning method is our system. You need good [examination] result to have a career. All depend on the result. ... Since I am using the drilling method, I have to keep stressing the same point, to remind them [students], point to them (Nagappan et al., 2006, p.176).

From two Malay language teachers:

Students do not have the initiative to learn and master the subject outside the classroom or outside the subject session. Students are not self-reliant and incapable of sourcing for materials as further reinforcement for their learning in class (Nagappan et al., 2006, p.193).

Students have to be directed and guided. It is seldom that the students learn on their own free will. Therefore, the students need to be assigned exercises or tasks either for consolidation or reinforcement and also so that they will continue to learn without lagging behind (Nagappan et al., 2006, p.194).

From two history teachers:

As to how students learn history, my observation is that the students in the good classes are able to understand and respond by giving feedback during the learning process. ... However the attitude of not willing to read sufficiently and the lack of willingness to revise make the students to feel it [History] is difficult. ... History requires extensive reading and memorization and this contributed to the students' lack of interest in the subject. As for students in the weaker classes, they are also not interested in the subject because there are too many facts that they have to read and understand (Nagappan et al., 2006, p.215).

Compared to other subjects, history requires plenty of reading, internalization and good memory. Students either read once or do not read at all because they consider it to be not important and difficult to understand. The revision exercises, immaterial of whether they are objective (multiple choice), structured or essay questions are seldom answered by the students because they consider them to be difficult. ... Questions that relate to 'how', 'why' and such as that are never raised (Nagappan et al., 2006, p.216).

Using the lens provided by Biggs and Tang (2007) discussed earlier, it is difficult, going through these data, not to conclude that the teachers are mostly at the lower level, with many if not most at Level 1 in terms of the theories of teaching they hold. True, the context in which the teachers work needs to be properly understood before one can be more assured about the conclusion, but the views they expressed do not inspire confidence that they hold a more sophisticated theories of teaching. Factors such a centrally-prescribed curriculum and a test-based accountability policy do have a major impact on the way they teach (Lim, 2003, Nagappan et al., 2006, Ratnavadivel & Lim, 2010) but then again many of them still expound a deficit model of teaching. This is one

major challenge that Malaysia needs to overcome if it were to transform learning in its educational institution.

Conclusion

Shulman (1999) argues that promoting quality in learning demands that learning be taken seriously. This means looking at learning as far more than bringing the knowledge outside the person – in books, theories, in the mind of teachers – to inside. If that were the case, then teaching is just a matter of transmitting knowledge. Indeed, he went on to say, “*learning is basically an interplay of two challenging processes – getting knowledge that is inside to move out, and getting knowledge that is outside to move in*” (Shulman, 1999, p.10). He was of course talking about the learning from a constructivist viewpoint, and viewed this way the learners need to be taken seriously. The point he was making may seem removed from the content of this paper, but viewed another way, it offers an important lesson: if efforts to transform the sort of learning that is pervasive in educational institutions are to stand any chance of making a difference, then getting the theories of teaching that are inside the teachers to move out, challenged, and getting them back inside the teachers is crucial. Teaching needs to be looked at as far more than transmission, and teachers need to be taken far more seriously than ever before.

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