Designing Teaching Based on Learners' Ways of Seeing the Object of Learning

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Abstract

In this article, we put forward an approach to investigating learners' ways of seeing the objects of learning (i.e. what they have to learn). This approach was inspired by Marton's (1981, 1986, 1988, 2015) theory of phenomenography, which in essence aims at putting aside our own presuppositions so as to reveal the original nature of the different ways the objects of learning are seen by learners. The results of such investigation are then taken into consideration in designing activities for teaching the objects of learning. We will illustrate this approach with several examples of our projects in teaching Chinese characters to local children in kindergartens and junior primary schools in Hong Kong. As this approach is generic, it may also have practical implications to language teaching in general.

1 Introduction

When teachers teach a certain content to learners, they often directly present that content to the learners while hoping that the learners will receive it accordingly. However, being ignorant of the content, the learners may see the content in a way that is different from that of the teachers. As a result, even though the content has been presented to learners, they may fail to understand what it really means. Thus, it is of crucial importance for teachers to know the learners' ways of seeing the content in order for them to be able to effectively teach the learners. This is the basic idea of phenomenography (to be introduced in due course below). In this article, we will report on three cases of teaching projects, inspired by phenomenography, which begin by investigating the learners' ways of seeing, in the hope of improving the teaching of Chinese characters.

2 Teaching Chinese characters

Before going into the details of our cases, we would like to briefly review the existing literature on teaching Chinese characters. Educators and researchers have proposed numerous approaches to teach characters (Lam, 2011; 佟樂泉、張一清, 1999; 關之英, 2000). For example, it has been suggested that teachers should take into account the historical development of characters to explain to learners how characters came to their present forms in history as shown in Figure 1 (賈國均, 2001).

Fig. 1. How the character 口 'mouth' evolved into its present form (adapted from the Dragonwise website)

Other proposed approaches include the teaching of characters by analysing their components (蘇靜白, 1991), using pinyin to enable early reading (李楠, 1985), explaining characters in meaningful texts (斯霞, 2001) and so on. A thorough review of a wide variety of these teaching approaches is provided in Lam (2011). All these teaching approaches by previous researchers were studied mostly in a deductive manner. The researchers first opted for a certain teaching approach and, according to it, designed a number of teaching activities. They then implemented these teaching activities in kindergartens or junior primary schools and evaluated the effect of the relevant teaching approach. It was usually the same person who promoted and evaluated the teaching approach at the same time, and the results were often obtained in favour of the teaching approaches. In other words, the researchers was committed to a certain teaching approach from the beginning and assumed its effectiveness throughout the studies.

There is actually another approach of investigation, which is to adopt a more open stance, without being confined to any particular teaching approach at the beginning. This allows for a thorough and in-depth investigation of the learners. It is only after this investigation that implications are drawn regarding the approaches of teaching. In this way, the teachers can design their teaching activities based on an in-depth understanding of the learners. For instance, prior to deciding which is the "best" way to teach characters, a fundamental question worthy of investigation is how learners actually see Chinese characters, bearing in mind that the way learners see characters may be rather different from that of the teachers, who are fluent readers of Chinese. Thus, researchers are in need of a research approach to look deeply into the nature and quality of the learning and teaching of the characters. Phenomenography, which we turned to, is one such research approach, which is well known for its power to reveal the original nature of a phenomenon.

3   Phenomenography

Phenomenography was developed by Professor Ference Marton of the University of Gothenburg and his international collaborators in Australia, Hong Kong, Sweden, and the United Kingdom (Bowden & Walsh, 2000; Marton & Tsui, 2004). Stemming from the discipline of Education Sciences, this approach has been widely used for investigating the nature of learning and teaching in educational settings (Marton, 2015; Marton & Booth, 1997).

The essence of phenomenography is that, to intuitively reveal the original nature of a phenomenon, researchers need to "bracket out" or put aside their own presuppositions prior to examining the phenomenon. Specifically the aims of a phenomenographic study are to find out the qualitatively different ways that a phenomenon appears to people (Marton, 1981, 1986, 1988). The phenomenon under investigation is usually of a certain specific content (called the "object of learning") and the people before which the relevant phenomenon appears are the learners learning that content. The results of a phenomenographic study are a number of categories of description that

reflect the learners' different ways of seeing the object of learning. It is important that the catego-
ries of description emerge from the study itself instead of being pre-determined before the study.
The task of the researchers is not to fit data into pre-existing categories but to identify categories of
description by looking at the data. Moreover, the categories of description identified in a phenom-
enographic study are qualitatively different, that is, they differ in terms of their quality or nature
(i.e. in qualitative terms), rather than in terms of the extent to which the learners understand the
object of learning (i.e. in quantitative terms).

The reason for studying the learners' different ways of seeing is for instructional purposes. In
the view of phenomenography, learning is seen as the process of changing the learners' ways of
seeing. Teachers do not simply convey the object of learning to the learners. Instead, they need to
consider that learners may see the object of learning in a way that is different from theirs, even if it
is the same object of learning that they are looking at. As a result, effective teaching entails
knowledge about how the object of learning is seen differently by the learners. Based on this
knowledge, teachers need to enact the object of learning in classrooms in such a way that can
change the learners' ways of seeing and enable them to see the object of learning in certain alterna-
tive desired ways that are more aligned with theirs. Thus, the study of the learners' ways of seeing
in phenomenographic studies is of paramount importance, as it contributes to the professional
knowledge of teachers in teaching the object of learning. It is not enough for teachers to know only
the formal and appropriate understanding of the object of learning as presented in textbooks, but
they should also be aware of the learners' different ways of seeing. Such awareness is very helpful
to teachers and should inform the design of activities for teaching the object of learning.

The focus of a phenomenographic study is often very specific. The unit of study is normally
not the delivery of a large unit in a programme (e.g. not the adoption of a particular whole curricu-
lum) but the learning of specific objects of learning intended to be taught in a few lessons. Exam-
ples of specific objects of learning include the recognition of Cantonese tones and the function of
semantic radicals in making inferences about the meanings of unknown characters, and others. A
phenomenographic study also does not focus on general teaching arrangements such as whether
information technology or project approach is used. It is because these general teaching arrange-
ments may not fit well with all kinds of different specific objects of learning. Similarly, the impli-
cations of the results of phenomenographic studies are mainly drawn to the teaching of specific
objects of learning rather than the prescribing of a whole curriculum that teachers must follow.
There is no one-size-fit-all solution in teaching. The results of phenomenographic studies only
provide teachers with knowledge about the learners' ways of seeing, and teachers have to make
their own judgments on how they should actually design their own teaching activities according to
the specifics of their situations.

4   Our approach

Having mentioned the basic tenets of phenomenograhy, we can now talk about the approach
we used in our projects. In short, we set out to put phenomenography into the particular context of
teaching Chinese characters. In our projects, we investigated the ways learners saw certain specific
objects of learning in learning Chinese characters. We put aside at the beginning what we thought
should be the "best" way of teaching characters. We took a more open stance and would like to
learn more about learners' actual ways of seeing. Only after obtaining a thorough understanding of
the learners do we make suggestions or design and develop teaching activities or materials in a
systematic way to help learners appropriate more powerful ways of seeing, which should in turn
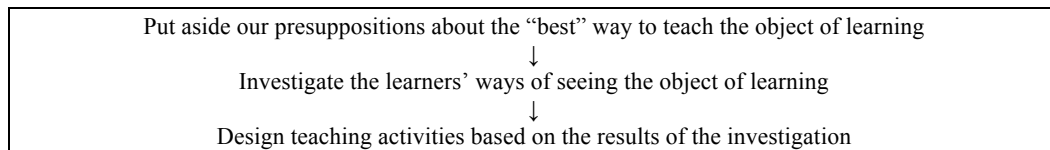foster their learning of characters. Figure 2 demonstrates the procedure of our approach.

Put aside our presuppositions about the "best" way to teach the object of learning
↓
Investigate the learners' ways of seeing the object of learning
↓
Design teaching activities based on the results of the investigation

Fig. 2. The procedure of our approach

Before we can further illustrate our projects, we have to briefly explain our background. We are teacher educators in higher education institutions, teaching school teachers how to teach Chinese to children (aged around 3 to 8). In our teacher education programmes, the majority of the participants are in-service teachers or principals, who were concurrently teaching children in either kindergartens or junior primary schools in Hong Kong. These children are mostly local Chinese children, whose mother tongue is Cantonese, a dialect of Yue Chinese that 96% of the people in Hong Kong can speak. In schools, these children are mainly taught to read and write in Chinese since they mostly have picked up the spoken language at home.

Given this background, there were two types of projects we conducted using the above approach. In the first type, the learners were children in kindergartens or junior primary schools. We investigated their ways of seeing and, based on the results, made recommendations or designed and developed teaching activities or online materials for teachers to use in teaching characters to children. In the other type of projects, we turned to the context of teacher education, where the learners were teachers learning to teach characters. We investigated their ways of seeing and made implications to teacher educators about how to enable teachers to learn to teach characters. In what follows, we will report on three cases of our projects using this approach. The first two cases were projects of the former type; while the last case was a project of the latter type. We will discuss the three cases in the following three sections, one after another, with the section title indicating the specific object of learning investigated in each case.

5   Teaching characters with a 'mouth'

Let us begin with some linguistic background of Chinese characters. Simple characters represent the outward appearances of the things that they stand for: this is the case for the character 口 'mouth' as shown in Figure 1 above. Compound characters are made up of two or more characters. For example, the compound character 吃 'to eat' is made up of the two characters 口 'mouth' and 乞 'to beg'. A character sometimes, not always, serves as a semantic radical in a compound character and in this case signifies that the meaning of the compound character is related to that of the radical. For example, the 口 'mouth' serves as a semantic radical in 吃 'to eat' and 'to eat' is related to, and an action performed by, the 'mouth'. Another example is the meaning of the compound character 叫 'to shout', which is also related to the 'mouth'.

Having said this, we can now more concretely illustrate our approach with one of our projects, which is the first case we report in this article. In this project, we took characters with a 'mouth' as the specific object of learning. If you have to teach this to a class of children, what characters will you use? How will you teach these characters?

We asked these questions to many kindergarten teachers in the classes of our teacher education programmes. From our own experience, they usually came up with a list of characters like 吃 'to eat', 吹 'to blow', 喝 'to drink' and others and suggested a variety of teaching activities such as matching exercises, card games, and others. We usually obtained answers like these, which reflected the way these teachers commonly conceived of the design of activities for teaching characters with a 'mouth', that is, the teaching activities should involve a list of characters with meanings related to 'mouth'.

However, we might arrive at a different kind of teaching activities if we use the phenomenographic approach discussed above. In our project, instead of making a list of characters out of our mind, we began with investigating children's ways of seeing Chinese characters. We asked the

research question of what characters with a 'mouth' meant to the children. To answer this research question, we observed the behaviour of children in an activity in the K3 class (aged 5–6) of a kindergarten (邱玉玲, 2012). The children were asked to identify characters with a 'mouth' from books and reading materials available in the classroom. They read the books and pointed out to the teacher a number of characters that they thought were characters with a 'mouth'. We categorised these characters into four categories, which represented four ways of seeing characters with a 'mouth'.

Category A contains characters with the 'mouth' as a semantic radical. Examples were the characters 叫 'to shout' and 吃 'to eat'. In these characters, the 口 'mouth' signified that the meanings of the characters were related to 'mouth'. These characters were also what we as adult readers usually came up with upon characters with a 'mouth'.

Category B contains characters in which the 'mouth' was not a semantic radical. Examples were 故 'cause', 別 'other', and 同 'same'. In these characters, the 口 did not serve as a semantic radical and the meanings of these characters were not related to 'mouth'.

Category C was the character 口 'mouth' itself.

Category D contains characters with a part that looked like the character 口 'mouth', that is, a square. Examples were 日 'sun' and 田 'field'. There was actually no character 口 contained in these characters but the appearance of a part of the characters happened to be a square. For example, the character 田 looks like it has four squares in it.

As can be seen, we as adult readers tend to see characters with a 'mouth' as those that fall within Category A. There is a tendency for us to recall characters with a 口 that signifies the meaning of 'mouth' in the characters. We can only see characters with a 'mouth' in our own way, probably taking no notice of those characters in Categories B, C, and D.

Parenthetically, to be more accurate, there were in our experience indeed a few teachers, especially those who had extensive experience in working with children, who could reply to us with characters in Categories B, C, and D. Besides, the identification of Category B actually accords with some of the findings of one of our previous developmental studies. Junior primary children (aged 6–9) were found to incorrectly interpret that the meanings of the characters 想 'to think' and 沐 'to bath', in which the 木 'tree' on the top left and on the right did not serve as a semantic radical, were related to that of a 'tree' (Lam & Tsui, 2013).

Having mentioned the results of our observation, we would like to suggest that when we teach children characters with a 'mouth', we should take the four ways of seeing into consideration. For example, in our teaching activities, we should ask children whether the character 田 really contains the character 口 'mouth' in it. By doing so, we hope to help children realise that the squares in the character 田 are not the character 口 'mouth'. Furthermore, we should also help the children realise that some of the components that look like 口 'mouth' in characters, for example, those in 叫 'to shout' and 吃 'to eat', serve as a semantic radical, while others, for example, those in 故 'cause' and 別 'other', do not. These are the suggestions that we will incorporate into the design of activities for teaching characters with a 'mouth' – thanks to the phenomenographic approach.

The above is the example of one of our projects using this approach. We began by identifying the different ways children saw the object of learning (i.e. characters with a 'mouth') and then considered the results (i.e. the four categories) in designing activities for teaching the object of learning (e.g. differentiating the different functions of the same 口 'mouth' in 叫 'to shout' and in 故 'cause'). This approach is generic enough and was also found in our other projects to be useful for various objects of learning in learning Chinese characters.

6 Teaching the relative length of strokes in a character 土 'soil'

The above approach actually dated back to the Dragonwise Projects conducted at the University of Hong Kong in the early nineties (Lam, Pun, Leung, Tse, & Ki, 1993), and which aimed at designing and developing multimedia materials for enhancing the teaching and learning of Chinese characters to children. In one of the Dragonwise project, which is the second case to be reported in

this article, we investigated the kind of errors that the children in junior primary schools (aged 6–9) made in writing Chinese characters. One example in our findings was that the children incorrectly wrote the character 土 'soil' as 士 'soldier' (see Fig. 3).
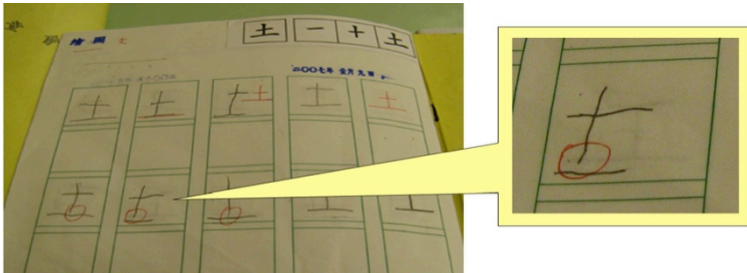

Fig. 3. A child incorrectly wrote the character 土 'soil' as 士 'solider'

The two characters 土 'soil' and 士 'soldier' indeed looked similar. We ascribed the reason that the children made such an error to their unawareness of the significance of the relative lengths of the two horizontal strokes in the characters. In other words, the character 土 had the upper horizontal stroke shorter than the lower one; while the character 士 had the upper horizontal stroke longer than the lower one. In view of this, we designed and developed online learning objects, in which children could tinker with the length of the strokes. As shown in Figure 4, depending on whether children shortened (or lengthened) the upper horizontal stroke, the pronunciation of either the character 土 or 士 would be produced. Similarly, if the vertical stroke were shortened, the sound of the character 工 'work' would be pronounced. We hoped that children's tinkering with the length of the strokes in the learning objects would foster their differentiation of the three characters 土, 士, and 工 (Lam et al., 2004).
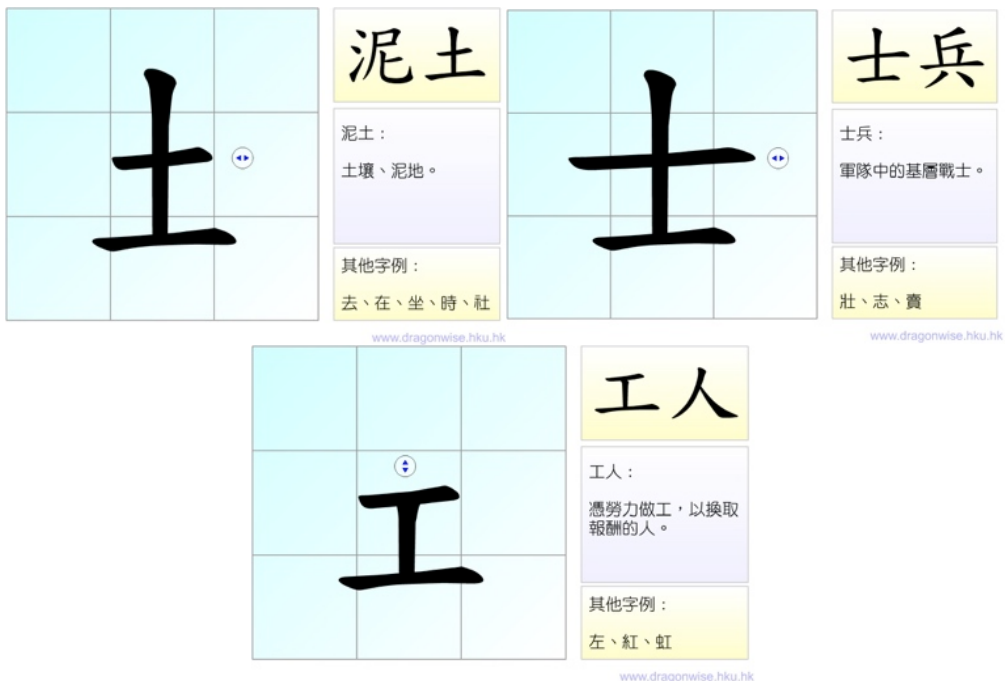

Fig. 4. Dragonwise learning object for helping children to differentiate between 土 'soil', 士 'solider', and 工 'work'

We believe that children's writing errors reflect their ways of seeing the written characters. We took these errors into consideration in designing the online learning objects. Other than the one described above, many other types of learning objects were also designed and developed throughout the years, which served to help children to learn different specific objects of learning (see Appendix below for more examples). For example, Figure 5 shows online learning objects such as (a) the differentiation between the similar-looking characters 人 'man,' 大 'big,' and 天 'sky', (b) the identification of words referring to clothes, (c) the reading aloud of a short text about festivals like Diwali, Ramadan, Dashain, and the Chinese new year, (d) the singing of the children's song "I am a teapot", (e) the order of strokes in writing characters, (f) the functions of the components in the character 媽 'mother', and (g) the relative distance between the two components in the character 有 'have'.
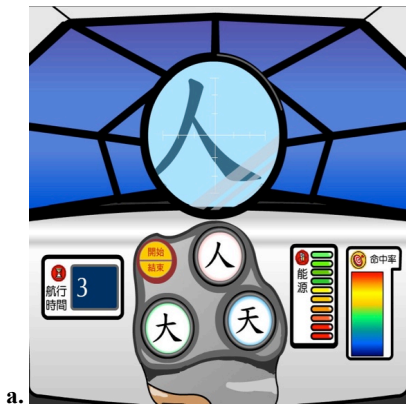
Fig. 5. Online learning objects developed with the phenomenographic approach

We recommend that teachers design their own teaching activities with the use of these online learning objects. Since these learning objects are small, self-contained, and reusable in their nature, teachers can flexibly embed them into their own teaching activities. These learning objects are now available on the Internet for teachers to use for free. A list of links to the relevant learning objects of the Dragonwise projects is provided in Table 1 (Chung et al., 2003; Ki et al., 2003; Lam et al., 2001; Lam et al., 2004).

Table 1. Links to the online learning objects of the Dragonwise projects

Name of projects	Links
現龍第二代學校協作計劃	http://www.dragonwise.hku.hk/dragon2/
現龍樂在詞中計劃	http://www.dragonwise.hku.hk/dragonwise/
南亞裔學生漢字學習軟件套	http://www.dragonwise.hku.hk/sa/
現龍計劃	http://www.dragonwise.hku.hk

7 Teaching the recognition of characters

Apart from studying the ways of seeing of children, we have also adopted the above approach to investigate the ways of seeing of teachers. As mentioned, we are teacher educators. We are interested in fostering teachers to learn how to teach Chinese characters. Instead of telling teachers what they should do, we begin with looking into and understanding how they actually see the objects of learning in their daily teaching in kindergartens.

Specifically, the third case reported in this article is related to one of the courses we taught in our teacher education programmes, which was entitled "Integrated Field Studies". In this course, we needed to supervise a group of teachers to do action research projects in their own kindergartens. Since the teachers commonly taught children to recognise Chinese characters in their kindergartens, we hoped to help the teachers ponder over what the recognition of Chinese characters (i.e. our object of learning) actually meant.

To teach the meaning of the recognition of characters, perhaps most teacher educators would directly give teachers some classical definitions, making references to the works of renowned scholars. One example is the definition used by the famous psychologist Ai in the fifties of the past century.

> 閱書之時吾人所接觸者為字形。見字形而了解其聲與義且無錯誤，這在普通的情形之下即叫做識字，而在我們這裏叫做字形的識別。[When we read books, we encounter the written characters. Upon seeing these written characters, we realise their sounds and meanings without making a mistake. This is in normal situations what is referred to as "having learnt characters." Here, we call it the recognition of written characters.'] (艾偉, 1958, p. 65)

The assumption of teacher educators here is that when teachers hear these well-defined definitions, they will "digest" them and accordingly gain a precise understanding of what the recognition of characters means. Rather than this, we adopted our phenomenographic approach in this course, hoping to design some teaching activities based on how teachers actually saw the recognition of characters. In other words, our research question was what the different ways of recognising characters meant to the teachers. We looked into the project proposals or reports that the teachers did while they attended the course. All these teachers were in-service teachers, who were teaching children in kindergartens while attending the course part-time. In their action research projects, they conducted activities for teaching children characters and assessed the children to see if they were able to recognise the characters before and/or after their teaching.

We particularly focused on the ways that these teachers assessed the children, that is, their methods of assessment. Although all these teachers shared the common belief that they were assessing the children's abilities to recognise the characters, they actually conducted their methods of assessment in a diverse variety of ways. We believed their different methods of assessment re-

flected different distinctive ways of seeing the recognition of characters. It was because when the children passed the assessments, the teachers would consider the children as being able to recognise the characters. Thus we were very much interested in what these different methods of assessment required children to perform, as they would involve the different ways that the object of learning (i.e. character recognition) was seen. Out of these different methods of assessment, we identified several categories that correspondingly represented ways of seeing the recognition of characters. Due to the limited space in this article, we shall only report on the five most common categories below.

7.1 Category A: Identifying meanings of characters

Figure 6 shows the most typical method of assessing the recognition of characters of the teachers. Here the children had to look at the written character on the left and then identify one of the two pictures on the right that denoted the meaning of the written character. The children circled the picture to indicate their choice. As could be seen, so long as the children could identify the meanings of characters, they were considered to be able to recognise the characters. Thus the recognition of characters was seen here as identifying meanings of characters.
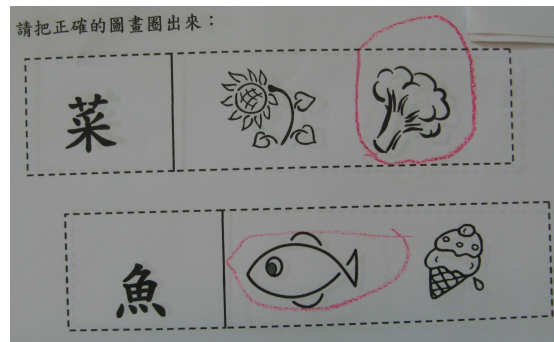

Fig. 6. Identifying meanings of the characters 菜 'vegetable' and 魚 'fish'

7.2 Category B: Reading characters aloud

Figure 7 shows another method of assessment in which the children had to look at each of the written characters in a list and say them to the teacher one after another. If the children pronounced a character correctly, the teacher would put a tick next to the character. Here the recognition of characters was seen as reading characters aloud.

In other words, the children were regarded as being able to recognise the characters if, upon seeing the written characters, they could come up with the sounds of the characters. In contrast to this, in the previous Category A, the children needed to come up with the meanings instead of the sounds. Although it was common that if the children knew the meanings, they also knew the sounds (as they could speak the language), there were cases that this might not be true. For instance, when children saw the written character 衣 'clothes' /ji1/ (i.e. the last character in the list in Figure 7), they might sometimes incorrectly pronounce it as /saam1/ because Cantonese speakers referred 'clothes' as /saam1/ (a different character 衫) in their daily speech; while the pronunciation of 衣 /ji1/ was only used in formal occasions. In this case, the children correctly came up with the meaning (i.e. they knew that the written character 衣 referred to 'clothes') but not the sound /ji1/. They would then be regarded as being able to recognise the character 衣 if a method of assessment in Category A were used, but not so for Category B. In this regard, we considered the ways of seeing the recognition of characters in Category A as different from those in Category B.

請讀出以下的文字：陳██

人	✓	眼	○
手	✓	耳	⊃
腳	⊙	口	✓
頭	○	鼻	○
舌	⊃	衣	⊃

[Translation: Please read out the following characters. 人 'man', 手 'hand', 腳 'foot', 頭 'head', 舌 'tongue', 眼 'eye', 耳 'ear', 口 'mouth', 鼻 'nose', 衣 'clothing',

Fig. 7. Reading characters aloud

7.3   Category C: Reading standardised characters aloud

Figure 8 shows the sample of a list of characters that a teacher adapted from a standardised test developed by Huang Hsiu-Shuang (黃秀霜, 2001) in Taiwan. The children had to read out each of the characters in the list one by one, and the teacher would note down the results in a separate record sheet. Here the recognition of characters was seen as whether the children could read out the characters in a standardised test.

簡單200字認字量表 樣本

子 一 人 天 上 小 了 大 好 來

很 下 水 不 生 頭 手 花 我 心

開 家 你 是 時 去 色 車 山 西

本 公 打 個 有 樹 老 東 象 事

魚 書 服 的 出 地 氣 學 要 衣

[Translation: Simple list of 200 characters for recognition. Sample. 子 'son', 一 'one', 人 'man', 天 'sky', 上 'up', etc.]

Fig. 8. Reading standardised characters aloud

In the Categories A and B, the teachers selected certain specific characters that they had taught the children in their teaching activities for use of assessing the children. In contrast to this, the teacher in Figure 8 chose to use a standardised test. The characters used for assessing the children were as such determined by the test, not the teachers, thereby being independent of the teaching

activities. This paralleled the difference between the concepts of achievement test and proficiency test (Alderson, Clapham, & Wall 1995). The former is often used at the end of a course and the content of the test is taken from the course; while in the latter, the content is independent of any specific courses and the test is used to determine certain general abilities of students.

7.4　Category D: Reading characters in a text aloud

Figure 9 shows an activity in which the children were required to read out a children's song. They had to read each of the characters in the song to the teacher. The teacher would put a mark under those characters in the song that were correctly pronounced. The recognition of characters was seen as being able to read aloud the characters in a text.

[Translation: Reading aloud children's song test / Name of the child / Age / Sex / Assessment date / Name of children's song: "Eating Hot Pot" / Name of tester / (1) Reading of children's song: (@1 point) / The whole family sits together to eat hot pot, tastes good, feels warm and happy / […] / Score obtained: Total ___ points]

Fig. 9. Reading characters in a text aloud

Here the children read the characters in a text; while in the previous categories, the children read the characters in isolation. In this Category D, the children thus read the characters in more meaningful contexts. However, even if the children could read out the text, this did not guarantee that they could read out each of the characters in the text one by one. For example, in the first sentence, even if they did not know the last character 鍋 'pot', they might be able to use the contextual clues to guess it correctly as long as they could read 一家圍坐吃火 'the whole family sits together to eat hot',. Since extra contextual clues were available, it was easier for the children to recognise a character here in a text than to recognise it in isolation as in other categories.

7.5　Category E: Reading characters with picture aloud

Figure 10 illustrates the activity in which the children had to read out characters on a set of cards one by one. On each card, there was a written character, on top of which was a picture show-

ing the meaning of the written character. Here the recognition of characters was seen as whether the children could read out written characters with pictures of their meanings provided.

Fig. 10. Reading characters with pictures for 帽 'hat', 衣 'clothes', 弟 'younger brother', 褲 'shorts', 爸 'father', 哥 'elder brother', 鞋 'shoe' and 牙 'teeth'

Since the pictures denoting the meanings of the written characters were available, the children in fact did not need to bother about the written characters. They could directly say out the meaning of pictures, rather than the written characters, to pass the assessment. In other words, even if the children had completely zero knowledge about the written characters, they could "pronounce" the characters correctly by reading the pictures so long as they could speak Chinese. Thus, the requirement of the methods of assessment in Category E was by its nature easier than that of those in Category B since pictorial clues were additionally given.

7.6   Discussion

We have discussed five ways of seeing the recognition of characters as reflected in the ways that the teachers assessed the abilities of the children to recognise the characters. Having mentioned this, we can now discuss how we, in our teacher education programme, foster teachers to reflect upon what the recognition of characters means. What we do is that we present these different ways of seeing, using concrete and contextual examples, to teachers and invite them to share their own practice in kindergartens. We then ask them to discuss the subtle differences among these different ways of seeing the objects of learning. In this way, we hope to help them clarify their expectations on their children. What do they expect their children to be able to perform in order that their children can be considered as being able to recognise characters? What different aspects of the methods of assessment should they consider when they assess their children, for example, in being able to identify meanings or sounds, to use standardised characters or learnt characters in their curricula? We also discuss with them technical issues like whether clues can be provided in the assessment.

As can be seen in the above five categories, there are important subtle differences among the different ways of seeing the recognition of characters. Among them, different levels of difficulty may be involved. For example, Category E, with the extra clues of pictures, is easier than Category B. In addition to this, the methods of assessment in most of the categories are consistent with the classical definitions, like that of Ai (1958) discussed earlier, but not in all of the categories. One may not regard Category E as truly assessing the recognition of characters since children who are able to speak Chinese without any knowledge of the written characters may still pass the assessment. We hope that, with the use of the above concrete examples, these subtle differences among the different ways of seeing the recognition of characters can be made explicit and clarified to teachers, which probably cannot be easily explained by giving them a general definition of character recognition.

Put simply, what we did in this course was to look more openly at how teachers actually saw the recognition of characters through examining their different methods of assessment. We then used the results as the materials for discussion with the teachers in other classes of our teacher education programmes. By doing so, we hope to help the teachers become able to see the recognition of characters in more powerful ways, thus becoming better at teaching and assessing character recognition. For more details on this study, see 林浩昌 (2012, 2014).

8 Conclusion

One may wonder whether our approach is a research approach (specifying how investigation should be done) or a teaching approach (specifying how teaching should be done). Our answer is "yes" to both. In terms of research, we believe that the purposes of most existing studies on teaching characters are merely to verify the effectiveness of a certain predetermined teaching approach. What we put forward here is a research approach that helps to generate and formulate new understanding about learners' ways of seeing. In terms of teaching, educators have proposed numerous approaches for the teaching of characters. What we would like to add to them is an approach that takes into account learners' ways of seeing the object of learning in the design of the teaching activities.

Future work of our approach may include the investigation of other objects of learning. For example, what are the different ways that non-Chinese learners see the different Cantonese tones? How do Hong Kong children see the order of the strokes in writing characters? What are the different ways that teachers teach children to write characters (Lam, 2014)? These are examples of research questions worthy of further exploration. Hopefully our research and teaching approach could shed light on not only the teaching of characters but also on language teaching at large.

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