

The cultural adaptability of the CLES: A Korean perspective

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Abstract

In many cases of learning environment studies conducted in non-English speaking countries, translated questionnaires are administered. These questionnaires have their origins in Western cultures such as the Australian science education community. This paper addresses the issues of translated questionnaires, illustrated by an example of problematic usage of the Constructivist Learning Environment Survey (CLES) in a Korean context. A doctoral study was conducted in which the CLES was administered to teachers and students in Korean senior high schools. We noticed that respondents struggled to make sense of items. Interviews revealed a serious mismatch between local cultural practices of Korean teachers and students and the cultural practices of the Australian CLES designers. The issue can be considered in two ways. First, even if several studies have obtained reasonable findings when using a translated questionnaire in cultural settings different from the place where the original questionnaire was developed, the findings do not guarantee that the translated items are semantically equivalent to the original items. Second, English-speaking researchers tend to presuppose unduly that cultural contexts embedded in the original questionnaire can be readily understood by respondents in non-English speaking contexts. We argue that translation of learning environment questionnaires for use in non-English speaking contexts should be extended beyond initial linguistic 'back-translation' procedures. An important next step is to ensure that the questionnaire exhibits meaningful aspects of their own lived experiences. As an outcome, we suggest a way of adapting the CLES to the cultural context of Korean senior high schools.

1. BACKGROUND

When I (the first author) planned this study, I noticed that there had been international efforts in the field of learning environment research for conceptualising and developing a large number of instruments and employing diverse methodologies in various contexts (Fraser, 1998). It also seemed that a large portion of studies in the field of learning environment research had employed perceptual measurement with survey questionnaires, most of which were developed in English. Because I hoped to obtain a comprehensive image of Korean high school classroom learning environments, I decided to utilise several questionnaires so that I could cover diverse aspects of classroom environments. From the realisation that those questionnaires should be available to Korean students in a language they could understand, I started to feel the necessity of translation. Initially, I regarded this translation process simply as one of the necessary procedures for the whole research, without imagining any serious issues associated with it.

As I proceeded with the study, particularly from reading about previous studies which had been conducted in non-English speaking countries, I found a new convention about more rigorous translation procedures, involving 'back-translation'. The notion of back-translation seemed to have potential for enhancing meaning transfer from the source language (English) to the target language (various Asian languages). However, while I was involved in translation and back-translation, I came to realise that this process is mainly aimed at gaining literal equivalence between source and target languages, which might not be sufficient. While I was interviewing Korean students and their teachers involved in the present study, this realisation became more obvious, and another critical issue related to translation emerged. This paper reports how I encountered and reflected on this issue with a particular instrument used for my doctoral study.

2. Information about questionnaire and the previous contexts for the CLES

The Constructivist Learning Environment Survey (CLES) was developed based on constructivist philosophy, which has had an increasing impact on science education during the past 20 years. Initially, Taylor (1991) constructed this instrument based on social and personal notions of constructivism whose main concerns were to enhance students' conceptual understanding. This version was found to be valid and reliable for use within Australian classrooms. However, it was found also that this version had some key conceptual dimensions missing. Adding notions of radical constructivism and critical theory, the CLES was elaborated and revised (Taylor, 1997). This new version was also confirmed to be useable with a wide range of samples in Australia and the USA (Fraser, 1998). The new version has five six-item scales, namely, Personal Relevance, Uncertainty, Shared Control, Critical Voice and Student Negotiation. The 30-item version has been recently shortened, by omitting four items, which showed poor item-scale reliability in previous studies plus a negatively worded item in the Personal Relevance scale. The final 25-item version was used in this study (see Appendix).

The CLES has been used in several studies involving non-Western countries (Aldridge, Taylor, Fraser & Chen, 2000; Idiris & Fraser, 1997; Soeharto, 1998). With the 30-item version, Aldridge, Fraser, Taylor and Chen (2000) conducted a cross-cultural study involving Australian and Taiwanese junior high school science students. Until then, studies in non-Western countries tended to use earlier versions of the CLES (Cho, 1997; Idiris & Fraser 1997; Soeharto; 1998). On the other hand, studies in Western countries (USA, Australia) have used both versions, namely, the version developed in 1991 with a weaker conceptual framework (Taylor, 1991) and the version elaborated in 1997 (Taylor, Fisher & Fraser, 1997), depending on the purpose of their studies (Beckett, 1999; Koury, 1994; Poh, 2000).

3. Learning Environment studies involving back-translation

Although the field of learning environment research started in Western countries with instruments developed in the English language, studies in non-Western countries have also contributed significantly to the field. In many cases, researchers in non-Western countries adapted the English instruments by translating them into their local languages. These studies (Chan & Watkins, 1994; Fraser, Pearse and Azmi, 1982; and Walberg, Singh and Rasher, 1977) have concentrated on establishing the validity, reliability and useability of adapted learning environment instruments in these countries, in order to establish this cross-cultural validity. Recently, a more rigorous back-translation procedure has been introduced and its successful implementation reported (Aldridge, Fraser, Taylor & Chan, 2000; Margianti & Fraser, 2000; Soerjaningsih & Fraser, 2000). It is noteworthy, however, that this procedure revealed another dilemma, reflected as a cultural difference (especially by Aldridge, Fraser, Taylor & Chan, 2000). Although the researchers carefully prepared the learning environment questionnaire for a cross-cultural comparison study involving back-translation, they found Australian and Taiwanese students to have different understandings of the content of the questionnaire, based on their different cultural backgrounds.

Critical steps involved in translating questionnaires were also reported by Lian, Wong and Chen (2000). They differentiated between 'literal translation' and 'translation with meaning', as defined by Newmark (1988), and suggested that translation with meaning is necessary for effective research. They followed five steps when they modified the Taiwanese version of a learning environment questionnaire into a Singaporean version: 1) customising and drafting of items, 2) focus group validation of the draft, 3) back translation of the validated draft to English, 4) appraisal of the back translation with the original English version, and 5) redrafting the inappropriately phrased items. I was particularly inspired by this study to identify the theme for this report.

4. Procedure undertaken

Initially, I launched my doctoral work with the aim of investigating learning environments in Korean high schools. Within the field of learning environment research, I planned the survey. First, I translated English questionnaires into Korean (Hangeul) in order to be available to Korean students. This preliminary procedure was done by direct translation of the English phrase to a Korean phrase, word by word, in order to maximise meaning transfer. In the next step, I asked a linguist who was fluent in both languages to back-translate the questionnaires, in order to make sure that the meanings of the translated items and the original items were congruent. This process again focused on enhancing meaning transfer from the original questionnaire into translated items, as recommended by Brislin (1970, 1976). In the final step of translation, two English-speaking academics checked the back translations to make sure that the Korean questionnaire conveyed the same meaning as the English questionnaire. This process was considered rigorous enough to obtain an 'interpretively valid' instrument for this study.

However, disappointingly, when I interviewed Korean students and teachers with the translated questionnaire, they mentioned that some items did not make sense to them, mainly because they had not actually experienced events described in the items. In response to these comments, I started to think about genuine validity and reliability of translated questionnaires, in general. *What would be the best way of translation? What kind of problems could be involved in this process?*

In the early stages of this study, along the line of Levine's (1963) anthropological argument, I believed that I might be able to contribute to general knowledge (of learning environments) by studying *my own culture* with the instruments developed in a different socio-cultural background, as long as the questionnaires were 'properly' translated. The notion of 'back-translation' seemed to be the very best way of obtaining proper questionnaires for Korean students in this particular study. Some studies within the field of learning environment research conducted in Asian countries supported my belief (refer to section 3). More attractively, some researchers showed evidence supporting the advantages of back-translation when it was used for Korean students (Kim & Lim, 1999; You & Morrison, 2000).

As my study progressed, I started to doubt the value of back-translation, mainly because some students and teachers continuously expressed concerns about the questionnaire. Their main concern was that some items did not make sense to them, even if they figured out their literal meaning. I realised that these students and teachers noticed (or felt) the cultural distance (or clash) between their own experiences and those reflected in the literally translated items, which maintained the cultural practices embedded in the original items (adapted from Newmark, 1988).

Frequently, where there is a cultural focus, there is a translation problem due to the cultural 'gap' or 'distance' between source and target language. The translation is defined as the rendering of the meaning of a text into another language in the way that the author intended the text.'

This realisation was formulated as an emergent research question for this study, as follows:

Can an instrument that is made in and for one cultural context be effectively used in different cultural settings?

5. Methodologies

As briefly mentioned in section 4, I initially conducted a survey with the CLES questionnaire and then interviewed several teachers and students. This interview was done in three modes, namely, face-to-face, telephone and e-mail mode, depending on the preference of teachers and students.

When I asked a Korean teacher to read through the items in the CLES, he made a face for a while and said, "Well, I'm not quite sure whether I can help you with this questionnaire. You know, sometimes it's really boring to read these kind of 'translated' items, which do not make good sense, actually. It is normally too obvious that it has been translated. I mean, the sentence just doesn't flow, in many cases. Yeah, that is obviously Korean and, word by word, is understandable, but the sentence as a whole is a bit awkward. Maybe because researchers normally exaggerate the original meaning, so they suddenly miss the context. Anyway, let me see...". In fact, he had been involved in doctoral study and had known some of the problems with survey questionnaires, which, in many cases, have been presumed to not be really serious. This teacher (teacher Lim) was very eager to explain his image or feelings about this questionnaire and suggested me to let other teachers have a look at this questionnaire as well. When the CLES teacher version was distributed to several teachers as suggested by teacher Lim, they kept asking what each scale was about. It seemed that they could not figure out their themes. In response, I added some explanation so that they could easily catch the idea of each scale. This explanation is described in parentheses at the top of each scale below.

In order to give a rich flavour of the problematic understandings or interpretations of Korean teachers and students of the CLES questionnaire, we here employ a rather subjective mode of description. Based on many conversations, e-mailings and phone calls with teachers and students, I reconstructed fictionalised episodes for each scale. Each fictionalised episode also includes some suggestions for a more culturally meaningful version of the CLES. These fictionalised episodes can be understood as a variation of 'impressionistic tales' as described by Van Manen (1988) because they were reconstructed mainly by my own impressions, based on actual conversations.

6. Findings and Suggestion for more suitable version of CLES with Korean students

This section provides the overall image from teachers as background information. After that, each episode is illustrated. Each episode starts with the original (English) items of a particular scale in the CLES.

Teachers' overall image of Constructivism and the CLES questionnaire

It was one of the lovely afternoons in spring. I was chatting with some of teachers, who were volunteering for this project, around a table in the staff room in school A.

One of the teachers put up his hand and asked me whether he can tell me something. Why not? I quickly replied, 'Sure, Mr. Han, please do'. He smiled at me and started to talk, 'I just thought it would be good for you to get to know what I felt by reading this questionnaire. Obviously, it was all about constructivism, wasn't it? (I smiled, 'cause it was too clear). That's why I came to think about constructivism itself, first. Well, I'd like to mean more exactly, 'the meaning of constructivism to teachers in Korea'. Since the notions of constructivism were introduced in science curriculum, we teachers have been pushed to implement those notions in our daily classroom practices. Nowadays, even the tertiary entrance exams actively deal with these notions, by relating scientific concepts to every day life experiences of students. As you know, our teaching practice is pretty much confined by the examination system and

documented curriculum of the Ministry of Education. We as teachers understand (in most cases) that constructivism is all about classes relating to everyday contexts and student-centred learning, as indicated in formal documents such as the formal curriculum. When I was reading this questionnaire, I rather felt a bit awkward or perhaps confused about constructivism. Oh, maybe I'm too indulgent now, any other opinion buddies?'

He asked other teachers to reveal their opinion about the CLES. I was very happy and relieved with this remark, because I felt a bit of pressure to seek other teachers' opinions as well. Surely enough, the rest of the teachers around the table agreed with him, by nodding. Another teacher contributed to our conversation, 'Well, yeah, I've got a similar feeling to teacher Han, why don't we move on to the first scale, I think I can give some more details, based on my understanding to you'. She (teacher Shim) was presiding this meeting! What a wonderful participant! All right, Let's move on, I shout to myself.

Episode 1: Personal Relevance:

(To what extent, do you relate lesson contents with students' everyday experiences?)

Item 1: In this class, I learn about the *world* outside of school.

Item 2: In this class, my new learning starts with problems about the *world* outside of school.

Item 3: In this class, I learn how science can be part of my out-of-school life.

Item 4. In this class, I get a better understanding of the *world* outside of school.

Item 5: I learn interesting things about the *world* outside of school.

Teacher Shim continued talking, "Yeah, this scale was pretty easy to understand. My students (she's a homeroom teacher of year 11) seemed to catch ideas about this scale, as well. But they kept asking me about the term 'world', meaning that the meaning of 'world' in that context was not clear to them. I explained to them to change the 'world' into 'natural phenomena'. Then, you know, some of my good students even suggested that, 'I get better understanding of the world outside of school', should be changed into, 'I can understand better about the natural phenomena which are reported in media and are experienced in my daily life'. And I quite agreed with them. Because this is the very interpretation of students themselves, it would be worthy reflecting on this for your research, wouldn't it?"

With these comments, I realised that we, as educational researchers, need to be aware of the wording from students, themselves – students' vocabulary. It was interesting to find out that students can reconstruct items in a questionnaire in terms of their own words.

Episode 2: Uncertainty:

(To what extent, do you reflect the perspectives from modern philosophy of science in your lessons?)

Item 6: In this class, I learn that science has changed over time.

Item 7: In this class, I learn that science is influenced by people's values and opinions.

Item 8: In this class, I learn about the different sciences used by people in other cultures.

Item 9: In this class, I learn that modern science is different from the science of long ago.

Item 10: In this class, I learn that science involves inventing theories.

One young looking teacher at the table carefully put up her hand, "well, could I talk this time?" She glanced at other teachers and got a very positive reaction. The rest of the teachers raised their voices, "Oh, yeah, you might be the best person to talk about this scale. You've been trained under the new curriculum, haven't you?, We do not have a serious idea about this notion, actually." It sounded interesting to me. Alright, what's going on here, now? Why are other teachers simultaneously recommending this young teacher to stand up? This teacher smiles first and keeps talking, "Thank you. Well, yeah, I've learned something about philosophy of science, as a compulsory subject from my teacher-training course. The instructors emphasised this notion by saying, " This notion will be included in high school students' textbook in the near future, so you guys have to be ready to teach this". Well, as they predicted, this notion is clearly dealt with in the recent science curriculum, and I, as a young generation teacher, have my personal opinion on it. But at the same time, I sometimes think, 'well, let me just skip this content this year. If included in my class, I might not be able to complete the rest of content within the scheduled time line'. As teachers are aware, textbooks contain this kind of contents, but some of them just leave that part to students' self-reading after school. That is, they don't put a priority on this in their classroom practice. Well, this is a basic idea of my own, and perhaps of our science teachers, about this scale. And I think students' understanding about this scale reflects this idea. I just want to mention, specifically about item 9, 'Modern science...science of long ago' does not transfer a clear meaning to students. It could be changed into, ' I understand (know) scientific knowledge is temporary and is subject to change as time goes on, because scientific knowledge is not absolute truth'.

Episode 3. Critical Voice:

(To what extent, can your students do the following actions towards you in your lessons?)

Item 11. In this class, it's O.K. for me to ask the teacher 'why do I have to learn this?'

Item 12. In this class, it's O.K. for me to question the way I'm being taught.

Item 13. In this class, it's O.K. for me to complain about activities that are confusing.

Item 14. In this class, it's O.K. for me to complain about anything that prevents me from learning.

Item 15. In this class, it's O.K. for me to express my opinion.

When our conversation reached this scale, teachers almost yelled, "Oh, yeah, this one is really hectic and triggering many ideas". Uh-ah, why are these teachers so excited now? They seem to pour out something to me. Hang on, let me proceed one by one for this scale. Hmm..

One teacher broke the ice by saying, "You know, these items made us quite perplexed, actually. When I read them through, I was really wondering how daring / brave / absurd you are. I couldn't imagine my students replying to these kinds of items'. I promptly replied, "Well no wonder. Your students actually were very hesitating when I interviewed them. But finally they told me something, which was pretty interesting to me". The teachers were staring at me for a while and asked, "Oh, why don't you tell us what they were talking about to you,

then? We're really curious, you see?" Hmm.. Interesting, now I'm taking a bridging role "O.K. here is the thing. Your students wanted clarification with additional description. For example, one student said, 'I wouldn't dare to speak out DIRECTLY to my teachers, but I can talk about my complaints to other students. So, if these items have 'to other students' or 'to teachers directly' phrase, it might be easier for me to reply. Isn't it interesting? It seemed to me that they clearly have some complaints towards you teachers or the lessons, but they wouldn't talk to you directly".

At this time, another teacher joined the conversation by saying, "Well, I think there might be some other factors affecting students' replying to this scale, rather than that social constraint. "Well, their reply might depend on their teachers' teaching experience and the school's working environment. Also, regional disparity (educationally developed, underdeveloped) might be one of the factors affecting their reply. Perception of the value of class learning would be different, depending on the school district, actually. The other thing is that pressure from classmates might be one of reasons which make Korean students not speak out against teachers' teaching'. "Yeah, that's very true", I responded. "Some students were telling their own feelings towards other students. 'We students are not friendly towards peers who have many questions and express them in public, because sometimes it can make the class speed too slow. They also feel jealousy or competitiveness. So, maybe if these items allow us to emphasise our own feelings then it would be more stimulating to us. Something like, 'In other cases, such as between your peers, or at home, can you do the same thing as described in these items?', might be needed".

Through this conversation, I felt an obvious cultural disparity which might have limited students' replies to this scale.

Episode 4: Shared Control:

(To what extent, can your students be involved in the following issues?)

Item 16. In this class, I help the teacher to plan what I'm going to learn.

Item 17. In this class, I help the teacher to decide how well I am learning.

Item 18. In this class, I help the teacher to decide which activities are best for me.

Item 19. In this class, I help the teacher to decide how much time I spend on activities.

Item 20. In this class, I help the teacher to decide which activities I do.

Again, teachers gave the most abundant comments and questions on the items within this scale. Most of them were telling me, "Because of a 'centralised system', which is controlled by teachers and other school authorities in Korean high schools, students seldom get chances to participate in this kind of activity. So, this scale doesn't make good sense to us (teachers), actually. I think students might feel similarly for the items in this scale". Well, this was true. In interview, students specifically pointed out item 16. They remarked, 'this item had better be changed into 'I can be involved in planning for school lessons with my teacher', in order to be more appropriate for our situation'. One teacher also said, 'for me, the meaning of this scale is not quite clear. It is not easy for our students to be active in the classroom. Normally, I ask some students to hand out and collect answer sheets when I give them tests. Can it be one example for this item? I think my students help me to assess their learning in this way'. Another teacher nodded and said, "Yeah, it could be the case. I think my students also help me to assess their learning by joining in peer-assessment.

Sometimes, I make them exchange their work sheets and give some points for their partners’.

When I was in this conversation, I realised that these teachers were inclined in a practical sense towards the items in this questionnaire, a perspective which might not fit the theoretical framework from which the questionnaire was developed. Their interpretation seemed to depend on their own practical experiences with their students, which could easily clash with the contexts embedded in the original English version. One question raised by teacher Kyu clearly reflected this point.

‘Does this scale ask whether our students can be actively involved in management of their own learning? Well, they sometimes seek advice from me, especially when they have to prepare for important tests such as how to plan properly, how to divide their time for each subject, etc.’

Episode 5: Student Negotiation

(Think about the degree of your students’ cooperation in your lessons.)

Item 21. In this class, I get the chance to talk to other students.

Item 22. I talk with other students about how to solve problems.

Item 23. I explain my ideas to other students.

Item 24. I ask other students to explain their ideas.

Item 25. Other students listen carefully to my ideas.

This scale seemed the clearest one to Korean students and teachers, in terms of interpretation or understanding. Teachers seldom raised any critical issue with this scale. At the end of meeting, teachers again told me their overall image about this questionnaire:

‘Yeah, Personal Relevance and Student Negotiation scale seem to be well defined, by providing relatively clear guidelines for teachers’ practice. However, the other three scales are a bit hectic to translate into practice. Actually, in the survey, students seemed to understand the literal meaning of items, but we felt that some items are not appropriate to the Korean education situation. During school time, our students seldom participate actively in their lessons. In a sense, they just follow what is told by teachers, like us. Because a large number of students are catered for in schools by a relatively small number of teachers, it is practically not easy for students to participate in these kinds of activities. For efficiency, teachers in school have to take the initiative for their lessons. In curriculum (such as general science), only student negotiation and personal relevance are highlighted in the name of constructivism’.

6. Discussions and Conclusion

From the conversations with teachers and students, it was revealed that Korean teachers mainly employ the limited notions of constructivism as described in the Personal Relevance and Student Negotiation scales, whose items could be easily understood by them. However, they did not have good understanding about the remaining scales, mainly because they did not get a chance to experiences those events in their practical teaching (or learning) situations. It is noteworthy that these conversations also provided a flavour of Korean school

culture, more specifically, the relationship between teachers and students, specifically, the respecting students and the respected teachers. It seemed that these conversations reflect the root of Confucian heritage, namely, 'respect for elders' and 'accept the authority in society such as school and teachers in general'.

This case study focused on the potential of an adapted learning environment questionnaire, which was originally developed in/for western society. The results suggest a need for adaptation to go beyond mere back translation which focuses only on the process of literal translation from one language into another language. While the adaptability of a literally translated questionnaire for another society was being examined, it was revealed that we should consider also the cultural adaptability of the questionnaire, associated with its interpretive validity. Only after this task is confirmed, can the study be interpreted meaningfully within its specific context. Also, the interpretation should emphasise understanding a particular context, rather than merely representing numerically the results of respondents' answers to the questionnaire. The results obtained by using the questionnaire should be interpreted within the context of the cultural environment where the study was performed. The value of 'importing' measurement, which was originally developed in one cultural context, into another cultural setting should be investigated via culturally appropriate adaptation procedures.

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