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on Student Performance in a Problem Based Learning Setting**

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IS PBL CULTURE FAIR? THE INFLUENCE OF GROUP CULTURAL COMPOSITIONS ON STUDENT PERFORMANCE IN A PROBLEM BASED LEARNING SETTING

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This paper reports the result of an exploratory study of the application of Terenzini et al. (2001) and Eringa et al. (2002) to an educational institution, one of the Netherlands' higher education in which apply PBL as an educational system. Recently, the International Hospitality Management (IHM) undergraduate program has decided to deploy internationalization and interculturalization as a strategic instrument for the diversification of its curriculum. One of the consequences is that large groups of foreign students have been attracted to the IHM. The purpose of this study is to investigate how the student nationalities and the group cultural compositions in PBL groups influence the student performance. Student performance is measured by learning process assessment (PBL participation points) and learning outcomes assessment (Total points for the module). More specifically, this study focuses on possible cultural bias (nationalities) that might accompany the form of assessment that the IHM uses. The results indicate that no significant differences exist between groups that are more or less divergent.

Group cultural compositions, problem-based learning, student performance, student background, tutor background, nationalities.

INTRODUCTION

Problem-based learning (PBL) is one of the educational methods used at the Christelijke Hogeschool Nederland (CHN) in Leeuwarden, the Netherlands. The system has been used at CHN since 1987. In 1969, PBL as a method was introduced at the Medical School of McMaster University in Hamilton, Canada. Barrows (1988), one of the founders of this educational method, formulates the most important advantages as follows: in problem-based learning, three important goals of professional education are advanced at the same time: acquiring knowledge that can be retrieved and applied, learning to learn (self-directed learning) and learning to analyze and solve problems. Problem-based learning (PBL) is an approach to professional that stresses the use of real - life problems as a stimulus for learning (Van Berkel & Schmidt, 2000, p. 231). The introduction of PBL in a professional school has serious consequences for the way in which student's learning process is organized (Van Berkel & Schmidt, 2000). The realities of the PBL system require a suitable attitude of both students and tutors. The success of PBL is determined by tutors' role and student participation in PBL sessions.

The International Hospitality Management (IHM) - a part of CHN - is a four-year undergraduate program. The IHM admits 350 students annually. Each of the first three years consists of six

integrated thematic problem-based modules of six weeks each. The fourth year is a 10-month industrial placement. In PBL system, students have two meetings per week, each meeting lasting 100 minutes (Eringa, *et al.*, 2002). In the curricula of the CHN, the academic year is divided into periods of six weeks, called “themes” or “modules”. Each module covers one particular theme, such as the “Hospitality Experience” in the first year program or “Operation Management” in the second year program. An interdisciplinary team of teachers called “module teams” is responsible for the module’s contents and produces what are called, “module books”. The module book contains all the “tasks” relevant to module’s themes. Moreover, it includes relevant references to textbooks or other learning resources such as articles in magazines, journals, videotapes, computer programs specifically Excel and SPSS or on-line searches that are provided as “tools” in school. Students meet twice a week together in “groups” of eight to fourteen students in called “PBL group”. These tutorial groups are randomly formed and their composition change after each module. Each group has a member of staff as a “tutor”. The tutor has the task of controlling the quality of the work within the group, without concerning him/herself with the content of discussion. In other words, despite tutors are not experts they still supervise and answer questions during the session. As illustrated by Barrows (1988) and Solomon (1994 cited in Schmidt *et al.*, 1992), in problem-based format, the teacher forsakes his or her accustomed role as authoritarian instructor and, instead, becomes a tutor, whose responsibility is to act as a facilitator of the group learning process, not to impart information or dictate the course of learning. The ability of a tutor to guide the learning process and offer appropriate feedback is critical in the success of the problem-based design (Barrows, 1988). The tutor’s task is to stimulate discussion, to provide students with some subject matter information whenever necessary to evaluate progress being made, and to monitor the extent to which group member contributes to the group’s objectives.

Students will deal with a problem or a task, using prior knowledge or “talent” in an initial effort to understand it. The purpose of this first attempt is to activate prior knowledge and elaborate on what is known to build a provisional model or “theory” of the phenomena described in a given problem (Schmidt *et al.*, 1989 cited in Van Berkel & Schmidt, 2000). Furthermore, the students may be required to formulate questions, purposes or learning goals for self-directed learning activities and engaged usually for two days, in individual study. As mentioned by Allen *et al.* (1996 cited in Miller, 2001), problem-based learning requires students to work in small groups to solve the case problem and meet the learning objectives. The students must be self-directed, that is, they must be willing to take on the responsibility for their own learning and act on it (Albanese & Mitchell, 1993; Vernon & Blake, 1993 cited in Miller, 2001).

During the two-days of individual study, the students will spend their “time” to use the facilities or “tools” as learning resources in the school in order to find relevant references for giving solution to their learning goals. Students are encouraged to use as many and varied learning resources as possible, including textbooks, journals, the internet, videos, faculty members, other students, as well as traditional lectures (Miller, 2001, p.31). Subsequently, students meet again and share knowledge gained, exchange points of view, and make clear on the subjects that may be vague to some. As mentioned by Albanese & Mitchell (1993) and Vernon & Blake (1993), students are expected to engage in collaborative independent study, in which they each take responsibility for dealing with a part of the problem individually, and then share information and insights with other members of the group. When a problem has been sufficiently solved, the group will proceed to the next problem, and so on. At the end of the module, final module assignments usually will be used as summative evaluation to measure knowledge that student have acquired during the module. As summary, the process of PBL is illustrated in the Figure 1 below. It is called the drivers of Problem-Based Learning (Zwaal, 2001).

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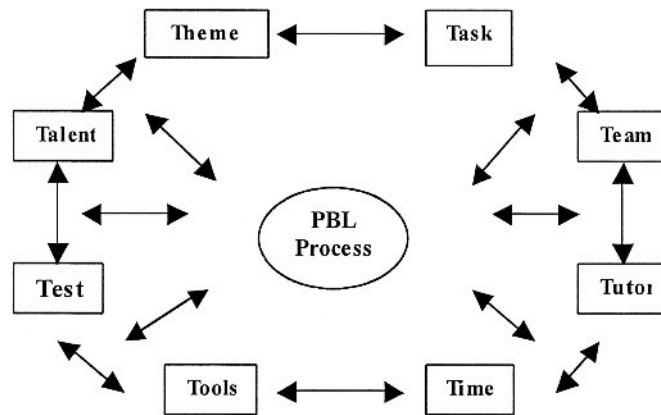


Figure 1
The Drivers of Problem Based Learning (Zwaal, 2004)

Through the development of multicultural competencies within the areas of awareness, knowledge, and skills, the probability of teachers using assessment and treatment strategies that meet the needs of a wide range of culturally diverse group increases. The need for flexible and culturally sensitive assessment techniques have continued to be stressed by many in the field (Facundo *et al.*, 1994; Nuttal *et al.*, in press). The IHM in the CHN, Leeuwarden develops instruments to assess the performance of both activities in the school setting and the activities in hospitality operations in a project called “Assessing Competencies in the School for Hotel Management.” The implementation of this new assessment approach meant training and coaching 1,100 students and 60 tutors in assessment and feedback. Both students and staff have international backgrounds; 25% of the students are not Dutch, coming from 42 different countries. A growing number of students comes from China (60 students annually), and other Asian countries. In addition, there is more or less about 25% of IHM staff are non-Dutch with 29 countries of origin, ranging from Jamaica to Turkey, France, Indonesia, USA and Russia (Eringa *et al.*, 2002).

Since most group activities in PBL requires a variety of skills and knowledge, heterogeneous groups may have some advantage over homogenous groups. Shaw (1976) has claimed that when a group is heterogeneous in terms of gender, personalities, opinions, abilities, skills and perspective, there is an increased probability that the group will possess the needed characteristics to complete its tasks effectively (p. 356). As supported by Robbins (2000), he concludes that heterogeneous groups - those composed of dissimilar individuals - would be more likely to have diverse abilities and information, even though they may have more conflicts because of diverse positions and backgrounds, but evidence generally supports the conclusion that heterogeneous groups perform more effectively than do those that are homogeneous (p. 96).

Diversity created by racial or national differences affects groups' performance. In business settings, evidence indicates that these elements of diversity interfere with group processes, at least in the short term (Watson, *et al.*, 1993, pp. 590 - 602). According to Robbins (2000), although cultural diversity seems to be an asset on tasks that call for a variety of viewpoints, members of culturally heterogeneous groups have more difficulties in learning to work with each other and solving problems. The good news is that these difficulties seem to dissolve with time. Watson *et al.*, (1993) strengthens this idea by claiming that although in the beginning newly formed culturally diverse groups do not perform as well as newly formed culturally homogeneous groups, the differences disappear after about “three months.” Although it may take more time to

reach a decision (Hoffman, Harburg & Maier, 1962 cited in NCRVE, 1999) heterogeneous groups are more likely to seek a full range of possible solutions to the problem than a homogeneous group (Ellis & Fisher, 1994 cited in NCRVE, 1999). Given the suggestions that heterogeneous groups need at least three months' to reach their full capacity than homogeneous groups, and that thematic PBL modules are carried out in only one and a half months per theme, it is questioned whether heterogeneous groups could perform to their full.

Studies by Chang (1996, 1999) and Sax (1996) have specifically examined whether the ethnic or gender composition of the students on a campus, in an academic major, or in a classroom has the educational benefits claimed by Rudenstine, Bollinger and others (cited in Terenzini *et al.*, 2001, p. 511). Chang's analysis exposes the relationship among structural diversity, student interactions and experiences, and educational outcome. He discovers that there is a cause-effect relationship between a campus's ethnic heterogeneity and learning outcomes through students' diversity-related experiences, particularly, socializing with peers from different racial/ethnic backgrounds. Whether the degree of ethnic diversity of a campus or classroom has direct effect on learning outcomes, however, remains an open question (Terenzini *et al.*, 2001).

According to Terenzini *et al.* (2001), there is a shortage of information on the role of ethnic composition in a classroom toward students' learning outcomes. Most studies examine diversity's influence on various dimension of students' psycho-social development, including (but not limited to) racial/ ethnic attitudes and values, academic and social self-concepts, civic behaviors and racial /ethnic awareness and knowledge. Moreover, there are only far fewer studies such as by Cohen, 1994; Cohen *et al.*, 1997; MacPhee *et al.*, 1994; Slavin, 1995 (cited in Terenzini *et al.*, 2001) explore the influence of diversity in the classroom or in other small groups on students' development of academic or intellectual knowledge and skills.

Furthermore, Terenzini *et al.* (2001) in the findings of their study suggests that the relation between diversity and student learning is at least "modestly detectable" in individual classrooms (p. 528). This leads to the purpose of this study that are (1) to examine whether there is a relationship between cultural composition of the PBL groups (the first and second year students) and students' performance as evaluated by the IHM assessment instrument, (2) to identify the factors contributing to significant difference in the result of student performance and (3) to investigate the influence of student gender, tutor backgrounds and student attendance may influence the assessment.

The cultural composition of the PBL groups in this study is defined as either homogenous or heterogeneous. The dimension that is used to differentiate these categories of group is country of origin (nationality). However, it cannot be refuted that cultural differences can be influenced not only by country of origin or ethnics but also how long a student has been living in the present country which is not considered in this study. The examination of cultural composition of the PBL groups is important to this study in identifying factors contributing to significant difference in the result of students' performance. Students' performance is evaluated using IHM assessment instrument at the end of every PBL session (PBL points). It is hoped that the result of evaluation will demonstrate the same level as shown in the final assessment (learning outcomes), which is shown in the result of total points at the end of the module (total points).

The study also investigates different background of the students (gender), tutor (tutors' nationality, gender and level of experience) and group attendance may influence the process and the result of the assessment. The study is focused on two important drivers of the PBL process namely students and tutors.

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METHOD

Four indicators of heterogeneity were applied in this research based on the previous studies by Terenzini *et al.* (2001) and Eringa *et al.* (2002). Student performance was measured by learning process assessment (PBL participation points) and learning outcomes assessment (Total points for the module). Eight hypotheses were tested based on two levels of group cultural compositions. The first four hypotheses were examined based on “student nationalities” (Dutch and non-Dutch students), regardless which PBL groups the students belong to, within the module:

1. There is a significant mean difference between student nationalities (Dutch students and non-Dutch students) on student performance.
2. There is a significant relationship between student gender and student performance.
3. There is a significant relationship between the tutor backgrounds (gender, nationality and level) and student performance.
4. There is a significant relationship between student nationalities and student attendance.

The second four hypotheses were examined based on group cultural compositions both for “culturally homogeneous groups and culturally heterogeneous groups” (group level):

5. There is a significant mean difference between the cultural compositions of groups and student performance.
6. There is a significant relationship between the compositions of student gender within the group and student performance.
7. There is a significant relationship between the tutor backgrounds (gender, nationality and level) and student performance in the group.
8. There is a significant relationship between cultural compositions of the PBL groups and student attendance.

Table 1
Research Hypotheses

Hypothesis	
H1	There is a significant mean difference between student nationalities (Dutch students and non-Dutch students) on student performance
H2	There is a significant relationship between student gender and student performance
H3a	There is a significant relationship between the tutor gender and student performance
H3b	There is a significant relationship between the tutor nationality and student performance
H3c	There is a significant relationship between the tutor level student performance
H4	There is a significant relationship between student nationalities and student attendance.
H5	There is a significant mean difference between the cultural compositions of groups and student performance
H6	There is a significant relationship between the compositions of student gender within the group and student performance
H7a	There is a significant relationship between the tutor gender and student performance in the group
H7b	There is a significant relationship between the tutor nationality and student performance in the group
H7c	There is a significant relationship between the tutor level and student performance in the group
H8	There is a significant relationship between cultural compositions of the PBL groups and group attendance.

A conceptual framework has been developed and comprised of seven domains: student background, tutor background, group composition, specified modules, tutorial group functioning, assessment result and learning outcomes. With this conceptual framework, the study endeavors to investigate whether there is significant mean difference between cultural compositions of PBL

groups on student performance. In order to get the answer from this problem statement, there are eight hypotheses are examined. The hypotheses are defined into two categories, which based on students' nationalities (Dutch and non-Dutch students) and group cultural compositions (culturally homogeneous and culturally heterogeneous groups) in module samples. Variables included in each domain of this framework are listed below. The variable names used in this research are italicized.

“Student Backgrounds” can be built from the “primary” and “secondary” dimensions of diversity as defined by University of Maryland (cited in Eringa *et al.*, 2002) such as cultural backgrounds (nationalities), gender, learning styles, prior knowledge, language levels and industry/working experience. In this paper, only two “primary” dimensions of diversity are employed that are “nationality” and “gender”. The study attempts to investigate whether there is a significant mean difference in the result of student performance between Dutch students and non-Dutch students in the modules sample (hypothesis 1). Moreover, the study also examines whether there is a significant relationship between student gender and student performance (hypothesis 2) and the relationship between composition of student gender in the PBL groups and student performance (hypothesis 6).

“Tutor backgrounds” consists of three dimensions of diversity that are cultural background (nationalities or country of origins), level of experience and gender. Cultural background refers to nationality regardless the condition if the tutors have stayed in the recent country, which is not his or her country of origin or the condition in which he or she has been living in several different countries. Level of experience refers to the status of the tutors whether she or he is lecture-tutor or student tutor. The last is gender that refers to the sex of the tutors whether it is male or female. Nationalities and gender are primary dimensions of diversity and level of experience is determined as one of the secondary diversity dimensions (University of Maryland cited in Eringa *et al.*, 2002). With these variables, the study tries to examine the relationship of tutor backgrounds and student performance (hypothesis 3 and 7), either based on student nationalities (Dutch or non-Dutch) or group cultural compositions in the module samples.

“Group compositions” consist of culturally homogeneous group and culturally heterogeneous group (labeled HETERO). A “culturally homogeneous group” is defined as a PBL group that consists of a number of students from the same nationality or cultural background (in this case Dutch nationality). In the statistical analysis, the homogeneous group will be remarked as 0 percent that shows there are no international students (labeled as COUNTRY) and one in DIVERSITY that refers to only one nationality in a PBL group meaning Dutch. A “culturally heterogeneous group” is defined as a PBL group that consists of a number of students from different nationalities or from a wide range of countries. The percentage of non-Dutch students in a PBL group (labeled COUNTRY), number of nationalities in a PBL group (labeled DIVERSITY), the categories of percentage for non-Dutch students in a PBL group (labeled HET LEV/ Heterogeneous level) are used as parameters to measure how diverse a PBL group. In this research, there are no homogeneous or heterogeneous groups differentiated by gender. With these four indicators of heterogeneity, the study attempt to investigate whether there is a significant mean difference between group cultural compositions on student performance (hypothesis 5).

“Modules samples” refers to the year of the students and modules in which the data were collected. For example, 1.1 refers to the first year student and module period 1. Participation points in PBL groups are taken from data of the 1st and 2nd year students and module period 1,5 and 6. The illustrations for the modules are given below. There are only two modules (ISS and IVA) consist of culturally homogeneous groups with all Dutch students. These modules are functioned as control groups. The other modules (IHE, IHR, IOM and IIS) are assembled from culturally homogeneous PBL groups and culturally heterogeneous PBL groups. The four indicators

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of heterogeneity are applied in these modules to examine whether there is a significant mean difference between group cultural compositions on student performance.

The groups were not randomly selected. First, the chosen modules for this research had PBL sessions in the modules either for the first year or second year programs. Secondly, the learning outcomes which are measured by the total points for the module in the chosen modules above consists of PBL participation points and points for the final module assignment which are graded partly by module coordinators or lectures and tutors. In other words, these chosen modules have the same structure when assessing student performance.

“Tutorial group functioning” determines the PBL process itself. Students (team), tutors and themes (module) as the three main drivers of PBL process (see Figure 1) determine how success the PBL method is carried out in supporting student-centered learning. The qualitative research will be conducted to determine student attitudes and activities toward PBL system and IHM assessment. In addition, this study also inquires about students’ attitudes toward group process and the tutors.

“Student attendance” refers to “missing sessions”, which were counted out from 11 PBL sessions in each thematic module. Student attendance is not considered as one of the PBL drivers that may influence student performance. It is realized that one student may have high missing sessions but his or her total performance could be better than another student who did not have any missing sessions. For example, student A had been absent for 2 times out of 11 PBL sessions and her total PBL points were still higher (considered she had got 3 points for every session which led to the result equal to 27 points) than student B who was present for the whole module (considered that he has got 2 points every PBL session which lead to the result equals to 22 points). However, this study tries to examine whether there is a significant relationship between student nationalities and student attendance (hypothesis 4) and between group cultural compositions and student attendance (hypothesis 8).

“Assessment result” (student participation points) was recorded based on consensus among self, peer and tutor in the PBL evaluation in every modules sample.

Finally, “learning outcomes” were measured by the total points that the student attained at the end of the module. The total points consist of student participation points and points for the module assignment. Points for the module assignment in this study were collected before the students had to re-do their assignment if they had failed in the related modules.

Table 2
The Chosen Modules for the Research

	03-09-2001 Module period 1	25-03-2002 Module period 5	13-05-2002 Module period 6
The first year Modules	Hospitality Experience (1.1)	Support Systems (1.5)	Value Adding (1.6)
The second year Modules	Hospitality Relations (2.1)	Operations Management (2.5)	Innovation in Services (2.6)

- Culturally Homogeneous Groups

The conceptual framework is presented below with some remarks:

- The interaction of PBL drivers: Students, tutors and Modules (\longleftrightarrow)
- The influence which leads to the learning process assessment and the learning outcomes assessment (\longrightarrow)
- The possible relationship between student nationalities or group cultural compositions and student attendance. Student attendance may negatively or positively influence student performance ()
- Tested hypothesis: 1, 2, 3, 4, 5, 6, 7 and 8

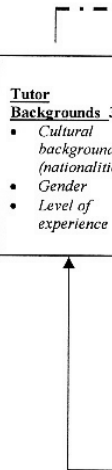


Figure 1
Conceptual Model

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SAMPLE AND DATA COLLECTION

Quantitative and qualitative data were gathered from cohorts of both the first and second year students, together with tutors who were involved in student teaching and learning. Evidence for the study came from 796 students enrolled in the six thematic modules of the IHM program. The students' average age is between 17 to 20 years old with 60% are female students and 40% are male students. Data were collected from September 2001 through June 2002. Students and tutors' background, student participation points from PBL assessment result and total points from modules Hospitality Experience (IHE), Hospitality Relations (IHR), Support System (ISS), Operation Management (IOM), Value Adding (IVA) and Innovation in Services (IIS) in module period 1, 5 and 6. At the same time, observation of the PBL activities (March 2002 through June 2002) and interviews about student attitudes and activities toward PBL system (May 2002 - June 2002, module IVA and IIS in module period 6) enhanced the study.

Table 3
Modules Sample

	03-09-01	25-03-02	13-05-02
	Module period 1	Module period 5	Module period 6
The first year modules	Hospitality Experience (IHE) (1.1) 208 students 23 groups	Support Systems (ISS) (1.5) 244 students 23 groups	Value Adding (IVA) (1.6) 183 students 16 groups
The second year modules	Hospitality Relations (IHR) (2.1) 189 students 18 groups	Operations Management (IOM) (2.5) 118 students 17 groups	Innovation in Services (IIS) (2.6) 190 students 16 groups
Total	397 students (12% Non-Dutch)	362 students (5% Non-Dutch)	373 students (6% Non-Dutch)

- Culturally Homogeneous Groups

Module Support Systems (period 5) and Module Value Adding (period 6) were chosen as representatives of culturally homogeneous groups because of all groups in these two thematic modules consisted of Dutch students. These groups were used as control groups in this study. The other modules such as Hospitality Experience, Hospitality Relations, Operation Management and Innovation in Services consisted of mixed non-Dutch students and Dutch students. These modules are treated as culturally heterogeneous groups. The table below presents the number of groups based on group cultural compositions, tutor gender, tutor nationality and tutor level.

The Netherlands was selected as the culturally homogeneous norms for two reasons. First, this study was conducted in the Netherlands and the sample pool was readily available. It was felt that a study comparing the Dutch groups with mixed cultural groups would be of considerable research value in PBL educational systems since the CHN (IHM) institute has started to present its internationalization policy. Second, the culture of the Netherlands places it at the quite extreme of several of Hofstede's cultural dimensions (the Netherlands scores low in femininity and high in individualism). According to Hofstede (2001), compared to Asian countries, the Netherlands ranks somewhat in the bottom for power distance (rank 40 of 53) and in the middle for short/long term dimensions (rank 10 of 20).

Table 4
Sample-Group Cultural Companion and Tutor Background

Criteria		Module period 1		Module period 5		Module period 6	
		IHE	IHR	ISS	IOM	IVA	IIS
Group cultural compositions	0	13	7	23	11	16	6
	1	10	11	-	6	-	10
Tutor gender	0	13	6	9	9	5	6
	1	10	12	14	8	11	10
Tutor Nationality	0	17	12	22	7	9	7
	1	6	6	1	10	6	9
Tutor Level	0	15	14	20	10	12	9
	1	8	4	3	7	4	7
Total number of groups		23 groups	18 groups	23 groups	17 groups	16 groups	16 groups

Group cultural composition (0= Homogeneous groups, 1= Heterogeneous groups), Tutor gender (0= Female tutor, 1=Male tutors), Tutor Nationality (0= Dutch tutor, 1= Non-Dutch tutor), Tutor Level (0= Lecture tutor, 1=Student tutor)

ANALYTICAL METHOD

In order to measure the effect of cultural diversity on performance in PBL groups, heterogeneity in PBL groups must be defined. The question is: What makes a group culturally homogeneous or heterogeneous? This is not easy to answer since students come from over 40 different countries, and some countries may have their own cultural diversity. Ideally, it would be better to make a profile of every student on some well-defined dimensions (Eringa *et al.*, 2002). Hofstede's dimensions might serve as such. The next step would be to calculate the difference of every group member to all the other members in the group and to take the sum of all these scores as a measure for heterogeneity in the group. According to Eringa *et al.* (2002), because of dimensions for diversity in an educational setting are not at all clear, it is decided for the time being to use a simpler measure. Since most of the students are still from the Netherlands, to be precise, 75%, and the other 25% are from 40 different countries, the first distinction was between groups that were more or less Dutch, with the percentage of non-Dutch students as an indicator. It was realized that this was an ethnocentric approach, taking one's (Dutch) background as a measure.

In short, as suggested by Eringa *et al.* (2002) and Terenzini *et al.* (2001), the percentage of non-Dutch students in the PBL group will be operationalized in this study by using a "heterogeneous index" created by dividing the number of students who reported their identity to be non-Dutch by the total number of students in the PBL group. In order to examine the level of heterogeneity more easily, the heterogeneous index was used to develop four categories of "group heterogeneity" as it is applied in the study by Terenzini *et al.*, (2001). The four categories and the range of the group heterogeneity levels within each category are explained as follows:

- Zero (0) is determined as "Homogeneity" or "No Heterogeneity", meaning there is no diversity at all.
- One (1) is determined as "Low Heterogeneity", with the number of non-Dutch students between 1 % to 20% of the total number of the students in the group.
- Two (2) is determined as "Medium Heterogeneity", with the number of non-Dutch students between 21 % to 40% of the total number of the students in the groups.
- Three (3) is determined as "High Heterogeneity", with the number of non-Dutch students between 41 % to 100% or in other words above 41 % of the total number of the students in the groups. To some extent, if the heterogeneity index approaches 50% level, it can be considered the highest diversity. In fact, if there are more than 50% non-Dutch of the total number of students in a group, the Dutch students will become "minority" in this group. Somehow, it can be interpreted that there

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is no heterogeneity at all in this type of group in the level of heterogeneity index shows 100%. However, as limitation of this study, the heterogeneity index was only used to cluster different level of non-Dutch student percentage in the group into some categories.

Data sheets were collected, coded (country/student nationality, group diversity, PBL points, total points, missing sessions, student gender, tutor nationality, tutor gender and tutor level), and entered into a computerized database. Response rates within various groups were calculated. *The mean scores of the PBL points and mean scores of total points for the module* (total points) as dependent variables are used within each group and *Country, Diversity, Hetero and Het_level/Heterogeneity index* as independent variables.

- *COUNTRY* shows the percentage of non-Dutch student within the group,
- *DIVERSITY* shows the number nationality in the group,
- *HETERO* shows the group is culturally homogeneous or heterogeneous,
- *HET_LEV* / Heterogeneity index shows the category level of the *COUNTRY*.

“Mean of missing sessions” (group attendance) of the module, “student gender”, “tutor gender”, “tutor nationality”, “tutor level” between culturally homogeneous and culturally heterogeneous groups; 1st year and 2nd year students for each evaluation form are also used as independent variables to make further comparisons.

The student data from module period 1, 5 and 6 for PBL points and total points were analyzed using descriptive statistics. For the objective of this research, the relationship between culturally homogeneous groups and culturally heterogeneous groups was analyzed by using two different statistical methods. The first method of analysis was (1) Correlation Analysis: Pearson product-moment (r) to test correlations between dependent and independent variables. PBL points, total module points and group attendance (missing sessions) were classified as dependent variables and students nationalities, four indicators of heterogeneity, student-gender, compositions of student gender, tutor-gender, tutor-level, tutor-nationalities as independent variables. The second analytical methods used (2) ANOVA to test whether there are significant mean differences on student performance (PBL points and total points for the module) based on student nationalities and the four indicators of heterogeneity.

These two different statistical methods were used to present three different results of analysis:

- The Dutch students and non-Dutch students within the modules on student performance. *HETERO* 1 is the independent variable to differentiate students' nationality (0 = Dutch students and 1 = non-Dutch students) in modules IHE, IHR, IOM and IIS.
- The group cultural composition within the modules (group level) on student performance. As mentioned above, the homogeneous and heterogeneous groups within the modules (IHE, IHR, IOM and IIS) are defined into four independent variables *COUNTRY*, *DIVERSITY*, *HETERO* (0 = Culturally homogeneous groups; 1 = Culturally heterogeneous groups) and *HET LEV* (0 = No heterogeneity, 1 = Low heterogeneity, 2 = Medium heterogeneity and 3 = High heterogeneity).
- The group cultural composition on student performance in the first year and second year modules. The comparison among three modules in the first year (IHE, ISS and IVA) and second year (IHR, IOM and IIS) modules are examined. Descriptive statistics, Correlation analysis, T-test and ANOVA present the result of analysis.

RESULTS OF THE ANALYSIS

In this section, the results of analysis of variance and the correlation analysis each of the links in the conceptual model are reported (Table 7). The results have shown that only two hypotheses are accepted which are hypotheses 1 and hypotheses 2.

1. Student Nationalities and Student Performance

In the modules Hospitality Experience, Hospitality Relations, Operations Management and Innovation in Services, the results indicates that there is a statistically significant mean difference between student nationalities (Dutch students and non-Dutch students) and PBL performance in all modules ($p=0.05$ and $p= 0.01$ level). On the other hand, there are no statistically significant differences between Dutch students and non-Dutch students on total points and missing sessions. Can it be summarized that the effect of the students' nationality within the groups only takes place on PBL performance in which student participation in the group process play important role to get the points?

Table 5
The Result of Hypothesis 1

PBL Points	Students perform better Significant level	Hetero 1 (Dutch and non-Dutch students)			
		IHE	IHR	IOM	IIS
PBL Points	Students perform better Significant level	Dutch	Non-Dutch	Non-Dutch	Non-Dutch
		.004**, F (1,206)= 8.30	.02*, F (1,187)= 5.98	.002**, F (1,116)= 10.14	.05*, F (1,188)=3.88
Total Points	Students perform better Significant level	Dutch	Non-Dutch	Non-Dutch	Dutch
		.000**, F (1,206)= 17.45	.23 (n.s), F (1,187)= 1.47	.16 (n.s), F (1,116)= 2.05	.21 (n.s), F (1,188)= 1.62
Missing Sessions	Students who have less absents Significant level	Dutch	Non-Dutch	Non-Dutch	Non-Dutch
		.001**, F (1,206)= 11.38	.052 (n.s), F (1,187)= 3.81	.10 (n.s), F (1,116)= 2.71	.17 (n.s), F (1,188)= 1.95

* Significant at 0.05 level. ** significant at 0.01 level

In addition, only module IHE (The first module in the first year program) demonstrates statistically significant mean differences on student performance and missing sessions (p. 53). Another assumption can be raised by comparing the results among the modules between the first year program (IHE) and the second year program (IHR, IOM and IIS). It seems that the effect of students' nationality as independent variable on student performance and missing sessions plays important roles in the first year program. With the result shows that Dutch students outperform non-Dutch students in the beginning of the first year program, can it be interpreted as an indicator that non-Dutch students need more time to adjust themselves in the new culture and the new learning environment? The result of this study is consistent with the study by Watson *et al.* (1993), Ellis and Fisher (1994, cited in Terenzini *et al.*, 2001) and Robbins (2000), that stated culturally heterogeneous groups are likely to need more time to adjust to a new group and learning environment.

Moreover, there was a significant relationship among the four indicators for cultural heterogeneity; the number of nationalities in a group (labeled DIVERSITY), the percentage of non-Dutch students per group (labeled COUNTRY), culturally homogeneous or heterogeneous groups (labeled HETERO) and the categories of percentage for non-Dutch students (labeled HET LEV/ Heterogeneity level). The ANOVA result showed there was no significant mean difference between the four indicators of heterogeneity and student performance.

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An interesting result shows that the effect of student gender and tutor backgrounds only occurs in module IVA and ISS in which consist of Dutch students only although the relationship is weak but it is statistically significant. In general, modules THE, IHR, IOM and ITS do not show any significant relationships between student gender or tutor background (gender, nationality and level) and learning process (PBL points). However, the result shows that there is statistically significant relationship between student gender and total points for the module ($p= 0.01$ in modules ISS, IVA and ITS and $p=0.05$ in modules THE and IOM). These statistically significant relationships appear in all modules except module IHR. They demonstrate positive relationships between female students and total points. Yet, there was no statistically significant relationship between either the compositions of student gender in PBL groups or tutor backgrounds and student performance.

Table 6
The Result of Hypothesis 2

Total points	Student gender	IHE	IHR	IOM	IIS	ISS	IVA
		-.14 *	-.09 (n.s)	-.23*	-.21**	-.20**	-.24**

* Significant at 0.05 level, ** significant at 0.01 level

To sum up, based on the attaining result, the first four hypotheses were tested and the findings from the study conclude that:

1.
 - a. There are significant mean differences between student nationalities (Dutch and non-Dutch students) on PBL performance.
 - b. There are no significant mean differences between student nationalities (Dutch and non-Dutch students) on total performance.
 2.
 - a. There are no significant relationships between student gender and PBL performance.
 - b. There are significant relationships between student gender and total performance.
 3. There are no significant relationships between the tutor backgrounds (gender, nationality and level) and student performance.
 4. There are no significant relationships between student nationalities on student attendance.
2. Group Cultural Composition and Student Performance

There are four indicators of heterogeneity were applied in this study namely COUNTRY, DIVERSITY, HETERO and HET_LEV. In general, based on these four indicators of group cultural compositions, the result shows that there are no any significant mean differences between group cultural composition and student performance. However, the result shows that in module IHR and IOM, groups with low level of heterogeneity perform the best. The findings of this study at the same time oppose the conclusion that was drawn by Terenzini et al. (2001) and Glaser (2002) that “medium level” of heterogeneous group outperforms other levels in group skills and problem-solving skills. It also demonstrates there are no significant relationships between group cultural composition and group attendance (missing sessions). Furthermore, the results show there are no significant relationships between composition of student gender or tutor backgrounds and student performance. In other words, based on the attaining result, the second part of four hypotheses were tested and the findings from the study concluded that:

5. There are no significant mean differences between cultural compositions of the groups on student performance.

6. There are no significant relationships between the composition of student gender and student performance.
7. There are no significant relationships between the tutor background (gender, nationality and level) and student performance.
8. There are no significant relationships between cultural compositions of the PBL groups and group attendance.

Based on the result in the interviews, students in the first year program, particularly Asian students, mentioned that they need more time to adjust themselves to the new culture and learning environment. Most Asian students who are accustomed to the traditional way of teaching find it difficult to accept the self-directed approach of PBL. Moreover, regardless the level of proficiency in the used-language, they are not used to speak up in the class unless the teacher or tutor appoints them. The IHM assessment is viewed as a “motivator” for non-Dutch students (Asian students) especially for the first year students to be able to express themselves about their ideas and opinions. If they do, they will get the participation points. After some time, they have more self-confidence in expressing their opinions compare to the first time they have just arrived in this country. The PBL system has drawn the attention of non-Dutch students in the new learning environment. Furthermore, related to missing sessions, another possible reason that non-Dutch students have the highest missing sessions in PBL sessions in module period 1, Hospitality Experience (IHE), just because some non-Dutch student have late arrival when the school started.

I remember when I started my role as a tutor in the module period 1, there were two non- Dutch students who had missed some PBL sessions because of late arrivals. They were nervous and shocked with the way of study in PBL class. They were silent throughout the period and would not say anything until the chairperson appointed one of them to express his opinions regarding the task in the module. After the class, they were confused and did not know what to do. They were afraid if they could not catch up with they had missed, thus feeling insecure. At this stage, it can be assumed that the students were in the culture shock. However, we decided to spend more time after PBL session to check how they felt and discuss what they were confused about related to the task or assignment. At the end of module period I, they passed the module. Some months went by, I met them again and asked how they were doing. They looked happier and it seemed they have already got used to studying in this learning environment. Moreover, they mentioned that they had more self-confidence in expressing themselves. They were not afraid as it used to be.

The effect of nationalities does not appear in the second year programs. The non-Dutch students outperform Dutch students (the mean differences are not statistically significant) in module IHR and IOM. However in module IIS, the Dutch students outperform non-Dutch students. In addition, the results from qualitative research also reveal that the IHM assessment instrument is a good tool to measure student participation in PBL sessions in the international learning environment. First year students, particularly non-Dutch students, feel that the IHM assessment instrument is a “motivator” for them to prepare for tasks and express their opinions in the PBL sessions. After some time, they are more confident about expressing themselves. However, second year students comment that every student was responsible for his own learning. The use of the IHM assessment is good to evaluate group performance but sometimes they felt that implementation of the assessment system cost a great deal of time. The ability to work together and to carry out the evaluation among themselves, peers and tutors in groups demanded particular skills, which needed training and monitoring. The most striking result, in the first or the second year modules, is that the students felt uncomfortable in assessing their peers. It is difficult for them to engage in argumentative discussion because they did not want to create “enemies” among group

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members. This result hardly supports the study by Love (1981 cited in Miller, 2001), which claimed that peer assessment was not biased by friendship.

Table 7
The Correlation Result of 8 Hypotheses

Hypothesis	Measured Link	Result	Statistical significance
H1. There is a significant mean difference between student nationalities on student performance	<ul style="list-style-type: none"> • Student nationalities and PBL points. • Student nationalities and total points. 	<ul style="list-style-type: none"> • Significant • Not significant 	<ul style="list-style-type: none"> • 4 modules, significant at 0.01 and 0.05 level • NA
H2. There is a significant relationship between student gender and student performance	<ul style="list-style-type: none"> • Student gender and PBL points. • Student gender and total points. 	<ul style="list-style-type: none"> • Not Significant • Significant 	<ul style="list-style-type: none"> • NA • 5 modules, significant at 0.01 and 0.05 level.
H3a. There is a significant relationship between the tutor gender and student performance	<ul style="list-style-type: none"> • Tutor gender and PBL points. • Tutor gender and total points. 	<ul style="list-style-type: none"> • Not Significant • Not Significant 	<ul style="list-style-type: none"> • NA • NA
H3b. There is a significant relationship between the tutor nationality and student performance	<ul style="list-style-type: none"> • Tutor nationality and PBL points. • Tutor nationality and total points. 	<ul style="list-style-type: none"> • Not Significant • Not Significant 	<ul style="list-style-type: none"> • NA • NA
H3c. There is a significant relationship between the tutor level student performance	<ul style="list-style-type: none"> • Tutor level and PBL points. • Tutor level and total points. 	<ul style="list-style-type: none"> • Not Significant • Not Significant 	<ul style="list-style-type: none"> • NA • NA
H4. There is a significant relationship between student nationalities and student attendance.	<ul style="list-style-type: none"> • Student nationalities and student attendance • Student nationalities and student attendance 	<ul style="list-style-type: none"> • Not significant • Not Significant 	<ul style="list-style-type: none"> • NA • NA
H5. There is a significant mean difference between the cultural compositions of groups and student performance	<ul style="list-style-type: none"> • Group cultural compositions and PBL points. • Group cultural compositions and total points. 	<ul style="list-style-type: none"> • Not significant (3 modules), significant (1 module) • Not Significant 	<ul style="list-style-type: none"> • Module Operation Management, $r = 0.57$, significant at 0.05 level. • NA
H6. There is a significant relationship between the compositions of student gender within the group and student performance	<ul style="list-style-type: none"> • Student gender composition and PBL points. • Student gender composition and total points. 	<ul style="list-style-type: none"> • Not significant • Not Significant 	<ul style="list-style-type: none"> • NA • NA
H7a. There is a significant relationship between the tutor gender and student performance in the group	<ul style="list-style-type: none"> • Tutor gender and average PBL points in the group. • Tutor gender and average total points in the group. 	<ul style="list-style-type: none"> • Not significant • Not Significant 	<ul style="list-style-type: none"> • NA • NA
H7b. There is a significant relationship between the tutor nationality and student performance in the group	<ul style="list-style-type: none"> • Tutor nationality and average PBL points in the group. • Tutor nationality and average total points in the group. 	<ul style="list-style-type: none"> • Not significant • Not Significant 	<ul style="list-style-type: none"> • NA • NA
H7c. There is a significant relationship between the tutor level and student performance in the group.	<ul style="list-style-type: none"> • Tutor level and average PBL points in the group. • Tutor level and average total points in the group. 	<ul style="list-style-type: none"> • Not significant • Not Significant 	<ul style="list-style-type: none"> • NA • NA
H8. There is a significant relationship between cultural compositions of the PBL groups and group attendance.	<ul style="list-style-type: none"> • Group cultural compositions and group attendance • Group cultural compositions and group attendance 	<ul style="list-style-type: none"> • Not significant • Not Significant 	<ul style="list-style-type: none"> • NA • NA

IMPLICATION FOR PRACTICE

Some specific experiences regarding the culture's effect, PBL process and assessment that can be learnt are as follows:

- Student populations will only increase in diversity; the most effective tutors will recognize this and adapt their teaching to optimize student learning and academic achievement. PBL tutors need to have better understanding about meaningful ways of assessing student work to motivate the learning.
- Students need to understand the rationale of PBL immediately in their first week of school, and the message has to be reinforced throughout the module. Experienced tutors with critical thinking skills play important part as role models in supervising group processes and assessing students' performance especially for formative purposes. Moreover, they should pay attention to the cultural influences brought by international students and their adjustment to the new environment. • Remediation of performance in the group is a process of learning new behavior and skills rather than changing students' personalities. These behaviors and skills are specific and relatively easy to learn with practice. When students improve their group participation and learning skills, their self-efficacy will also improve, providing the basis for ongoing learning. Self, peer-and tutor assessment can be applied as a formal system to support the remediation process.
- Criteria and standards for assessment of participation (1, 2, 3 or 4 points) must be explicit, clear and consistent with the philosophy of PBL. Students and tutors must understand that these standards will be applied without exception but that support is available to help students in both the process of learning and the acquisition of an adequate knowledge base.
- Assessment of learning outcomes should provide a basis for decisions, clear purposes must be determined, communicated to the tutors and students, and focused on specific achievement targets.
- Appropriate assessment methodologies should be selected with input from student and tutors.

From the results, it can be learnt about the selection of the group members, validity of assessment and socialization of students. These lessons have had a profound effect upon PBL practices ever since. It has become clear that student understanding of the purpose, method and outcome of assessment is crucial to its success (Mennin et al., 2001, p. 162).

DISCUSSION OF LIMITATIONS

The result of this study has led to several limitations. First, only two modules (module 5 and 6, March 25th, 2002 until June 24th, 2002) have been observed. Second, the composition of the group samples for culturally homogeneous and heterogeneous groups in the modules are not equal since the writer takes all the PBL groups in all modules as group samples.

Third, the influences of age, learning style, prior knowledge, skills and working experience as parts of student background are ignored in this study due to time limitation. As suggested by Miller (2001), "Cultural differences would be influenced not only by country of origin, but also by how long the student has been living in the present country." Only nationality or country of origin is used as the cultural dimension of student background to differentiate cultural composition of PBL groups in IHM program. How long the student has been living in the present country and how many times he or she has visited or stayed in various countries are underestimated in this study in which leads to as a limitation.

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Fourth, the study's design and database are cross-sectional. The concept of learning, attitude, development, or adapting to the new environment implies change over time. Moreover, the impact of group diversity may also vary over time. Interview and observation was only carried out within one academic period. As mentioned above, questions about people's opinions and attitudes always potentially suffer from low reliability because they may change over a periods of time depending on what they have heard, seen and experience. Students develop their learning and performance over time and at varying rates. This study is limited by the fact that changes in the student performance were examined only one academic year. A longitudinal design will provide a more rigorous test of whether cultural composition of a group is related to student performance. Fifth, the measurements of student performance in this study are based on the result of student participation points (based on consensus among self, peer and tutor assessment) and the total points of the module (module assignment and PBL participation points). The assessment results and learning outcomes may be more subjective measures than other objective measures of student learning such as the use of standardized tests or examinations.

Sixth, as noted by Eringa *et al.*, (2002), "It is better that the group reaches consensus on criteria that slightly deviate from the prescribed instrument (external accountability), than that will be confusion within the group about the criteria." If the criteria are differently structured in every PBL groups, then multiple groups cannot be easily compared to each other in this study. Finally, the study examines the influence of different levels of group heterogeneity on student performance only in relation to the effect of no group heterogeneity at all. Some levels of heterogeneity may be more or less, positively or negatively, related to learning gains (Terenzini, *et al.*, 2001). The future research on this matter is strongly encouraged.

What direction should future academic and other research take? Reflecting the issues, five suggestions are offered below:

- Replicating the study design particularly for first year students with the groups (both culturally homogenous and heterogeneous) that will remain together for a longer period of time (such as for two modules or three months instead of six weeks) to determine whether the students will develop their own group culture, their own way of solving problems and working together. As claimed by Watson *et al.* (1993) that although newly formed culturally diverse group does not perform as well as newly formed culturally homogeneous group, the differences disappear after about three months.
- Investigating whether there is an effect of interaction among student gender, tutor backgrounds and group attendance on student performance and how it may different in culturally homogeneous and heterogeneous groups by using more advanced statistical instruments such as multivariate analysis of variance (MANOVA) and regression analysis which were absent in this study.
- Identifying possible relationships between ethnic diversity and students' preferred learning styles on student academic performance.
- Examining the level of agreement among self, peer and tutor assessment in Problem-Based Learning in order to serve as a valid triangulated system of evaluation (Miller, 2001).
- Examining the relationship among self, peer and tutor assessment using a qualitative form of assessment, such as a questionnaire as suggested by Miller (2001).

REFERENCES

- Aaron Marcus & Associates, Inc. (2000). *Cultural dimensions and global web user-interface design: What? So what? Now what?* (online) (cited October, 24th 2002). Available from < URL <http://www.tri.sbc.com/hfweb/marcus/hfweb00marcus.htm>

LINTJE SIEHOYONO & KLAAS ERINGA

- Adams, G. and Schvaneveldt, J. (1991). *Understanding Research Methods* (2nd edn). New York: Longman.
- Albenese, M. A., Mitchell, S. (1993). Problem-based learning: A review of literature on its outcomes and patient issues. *Academic Medicine*, 68 (1), 52-81.
- American Psychological Association Washington DC (1995) *Working with diverse learners and school staff in a multicultural society* (online) (cited October, 24th 2002). Available from <URL http://www.ed.gov/databases/ERIC_Digests/ed390018.html>
- Anderson, W. N. & Hiltz, S.R (2001). Culturally heterogeneous vs. culturally homogeneous groups in distributed group support systems: Effects on group process and consensus. Paper presented for the 34th Hawaii International Conference on System Sciences and New Jersey Center for Multimedia Research.
- Aspy, D.N., Aspy, C. B., & Quimby, P.M. (1993). What doctors can teach teachers about problem-based learning. *Educational Leadership*, 50 (7), 22-24.
- Astin, A. W. (1991). *Assessment for Excellence: The Philosophy and Practice of Assessment and Evaluation in Higher Education*. New York: American Council on Education/ Macmillan.
- Banta T. W., Black, K. E., Kline, K. A. (January-February 2001). Assessing the effectiveness of problem-based learning. *Assessment Update*, 13 (1), 3-11.
- Barnes J. G. Glynn W. J. (1995). *Understanding Service Management*. England: John Wiley & Sons Ltd.
- Barrows, I-I. (1988). *The Tutorial Process*. Southern Illinois University School of Medicine, Illinois.
- Bernstein, P., Tipping, J. Bercovitz, K., & Skinner, H. A. (1995). Shifting students and faculty to a PBL curriculum: Attitudes changed and lessons learned. *Academic Medicine*, 70 (3), 245-247.
- Boud, D., Falchikov, N. (1989). Quantitative studies of self-assessment in higher education. *Higher Education*. 18 (5), 529-49.
- Bridges, E. M. & Hallinger, P. (1991, September). *Problem-Based Learning in Medical and Managerial Education*. Nashville, TN.
- Bridges, E. M. & Hallinger, P. (1991, September). Problem-based learning in medical and managerial education. Paper presented for the Cognition and School Leadership Conference of the National Center for Educational Leadership and the Ontario Institute for Studies in Education, Nashville, TN.
- Brown, S and Knight, P (1994). *Assessing Learners in Higher Education*. London, UK: Kogan Page Limited. California Department of Education (2002). *Diversity: Issues and responses* (online) (cited 23rd October 2002). Available from <URL <http://www.cde.ca.gov/iasa/diversity.html#2>>.
- Carrol, J. G. and Goldberg, S. R. (1989). Teaching consultants: a collegial approach to better teaching. *College Teaching*, 37. pp. 143-146.
- Christelijke Hogeschool Nederland (2001). *Student regulations part 2: Educational matters*. Leeuwarden, the Netherlands.
- Chubbuck & Cole (Spring, 2002). Inquiry into Educational Issues: Culture and schooling (online) (cited February 28th, 2003). Available from <URL <http://www.marquette.edu/education/educ048/sample/html/Culture%20&%20Schooling%20page%203.htm1>>
- CLAD III dictionary *Cultural terms for CLAD III test* (online) (cited February 19th, 2003). Available from <URL <http://www.azusausd.k12.ca.us/bilingual/Module3Dictionary.html>>
- Creswell, J. W. (1004). *Research Design: Qualitative and Quantitative Approaches*. USA: Sage publications.
- Ebel, R.L and Frisbie, D.A (1991). *Essentials of Educational Measurement*. United States of America: Prentice-Hall. Inc.
- Eringa, K., Otting, H., Siehoyono, L. and Zwaal, W. (2002). Self, peer, and tutor assessment of hospitality management competencies in an intercultural setting. Paper presented for the 91st EDINEB conference in Guadalajara, Mexico.
- Eipascope (2000). *Walking the tightrope -cultural diversity in the context of European integration* (online) (cited 24th October 2002). Available from <URL <http://eipa.nl>>.
- Ewell, P.T. (1988). Implementing assessment: Some organizational issues, In T.W. Banta (Ed.), *Implementing Outcomes Assessment: Promise and Perils (New Directions for Institutional Research No. 59, pp. 9-24)*. San Francisco: Jossey -Bass.
- Facundo, A., Nuttall, E. V., & Walton, J (1994). Culturally sensitive assessment in schools. In P. Pederson & J. C. Carey (Eds), *Multicultural Counseling in Schools: A Practical Handbook* (pp. 207-223). Boston, MA: Allyn & Bacon.
- Falchikov, N and Boud, D (1989). Student self-assessment in higher education: a meta-analysis. *Review of Educational Research*, 59 (4), 395-430.
- Gary, P. L., Kenneth, N., Wexley (1994). *Increasing Productivity through Performance Appraisal*. United States

IS PBL CULTURE FAIR?

- of America: Addison - Wesley Publishing Company, Inc.
- Glaser, E. (2002). *Cultural divergence or convergence: What is better for the individual, the group, and the organization?*. Johannes Kepler University Linz, Austria (online) (cited 15th December 2002). Available from <URL [http://www.lang.uni-linz.ac.at/Glaser/research/Cultural divergence. htm](http://www.lang.uni-linz.ac.at/Glaser/research/Cultural%20divergence.htm)>.
- Gray, P. J., & Banta, T. W. (Eds.), (1997). *The campus - level impact of assessment: Progress, problems and possibilities* (New Directions for Higher Education No. 100). San Francisco, USA: Jossey-Bass.
- Gorts, C. A. (2000). *The Significance of Personal Relationship in Cultural Perspective: A Comparison of Individualistic and Collectivistic Cultures*. Ridderkerk, The Netherlands: Offsetdrukkerij Ridderprint B. V.
- HarcourC, Inc (2002). *Working and speaking in small groups* (online) (cited 15th December 2002). Available from <URL <http://www.webucss.edu/commlab/sellnow-chl8.ppt>>.
- Hofstede, G. (2001). *Cultures Consequence: Comparing Values, Behaviors, Institutions and Organizational Across Nations*. California, USA: Sage Publications, Inc.
- Hofstede, G. (1997). *Culture and Organizations: Software of the Mind*. McGraw-Hill.
- Hofstede, G. (1991). *Cultures and Organizations, Intercultural Cooperation and Its Importance for Survival*. UK: McGraw-Hill International.
- Hofstede G. (1984). *Culture's Consequences: International Difference in Work-Related Values*. Beverly Hills, CA: Sage Publications.
- Mahalski, PA (1992). Essay - writing: Do study manuals give relevant advice? *Higher Education*, 24 (1), 113-32.
- Mayo, P., Donnelly, M. B., Nash, P. P., & Schwartz, R. W. (1993). Student perceptions of tutor effectiveness in problem based surgery clerkship. *Teaching and Learning in Medicine*, 5 (4), 227-233.
- MacMaster Medical School (1998). *Assessment of PBL* (online) (cited October, 22nd October 2002). Available from <URL <http://www.grian.com/pblpage/pbl.html>>.
- Mennin, S., Schwartz, P., Webb, G. (2001). *Problem-Based Learning: Case Studies, Experience and Practice*. London, UK: Kogan Page Limited.
- Miller, P. (2001). *Self, Peer and Faculty Assessment of Student Performance in Problem Based Learning*. Ph.D. thesis, University of Sciences in Philadelphia.
- NC State University (June 5th, 2000). *Diversity initiative: Diversity definition* (online) (cited February 19th, 2003). Available from <URL <http://www.ncsu.edu/provost/diversity/definition.html>>
- Nuttall, E. V, Sanchez, W., Borrás, L., Nuttal, R., & Varvogli, L. (in press). Assessment of the culturally and linguistically different child with emotional problems. In M. Breen & J. D Fiedler-Craig (Eds), *Behavioral Approaches to the Assessment of Emotionally Disturbed Youth: A Handbook for School Based Practitioners*. Austin, TX: Pro-Ed.
- Oppenheim, A. N. (1992). *Questionnaire Design, Interviewing and Attitude Measurement*. Great Britain: Biddles Ltd.
- Peter, A.J., Bouhuijs, H. G., Schmidt, Henk J.M. van Berkel (1993). *Problem-Based Learning as an Educational Strategy*. Maastricht, The Netherlands: Network Publications.
- Pincus, K. V. (1995). Introductory accounting: Changing the first course. *New Directions for Teaching and Learning*, 61, 88-98.
- Robson, C. (1993). *Real World Research*. Oxford, UK: Blackwell.
- Robbins, Stephen P. (2000). *Essentials of Organizational Behavior*. New Jersey, USA: Prentice Hall.
- Saunders, M., Lewis, P., Thornhill, A. (2000). *Research Methods for Business Students*. England: Pearson Education Limited.
- Savin-Baden, M. (2000). *Problem Based Learning in Higher Education: Untold Stories*. Buckingham: The Society for Research into Higher Education & Open University Press.
- Schmidt, H. G., Henny, P.A., & de Vries, M. (1992). Comparing problem-based with conventional education: A review of the University of Limburg medical school experiment. *Annals of Community-Oriented Education*, 5, 193-198.
- Schneider, B. and Bowen, D. E. (1995). *Winning the Service Game*. Boston: Harvard Business School Press.
- Smith, D., Eder, D. (2001, January - February). Assessment and program review: Linking Two Processes. *Assessment Update*, 13 (1), 1.
- Stake, Robert E. (1995). *The Art of Case Study Research*. California, USA: Sage Publications, Inc.
- Shaw, M. E. (1976). *Contemporary Topics in Social Psychology*. Morristown, NJ: General Learning Press.
- Skerrit, O. Z. (1992). *Action Research in Higher Education: Examples and Reflections*. London, UK: Kogan Page Limited.
- Shannon, S. and Norman, G. (1995). *Evaluation Methods: A Resource Handbook. The Program for Educational Development*. Canada: Me. Master University.

LINTJE SIEHOYONO & KLAAS ERINGA

- Shafer, L. (1998). *Cultural approaches to looking at international schools*. Fairfax, Virginia: George Mason University (online) (cited December 16th, 2002). Available from <URL http://mason.gmu.edu/~ishafer/cultural_approaches.html>.
- Tanaka, G. (in press). *The Intercultural Campus: Transcending Culture and Power in American Higher Education*. New York: Peter Lang.
- Terenzini, Patrick T., Cabrera, Alberto F., Colbeck, Carol L., Bjorklund, Stefani A., Parente, John M. (2001). Racial and ethnic diversity in the classroom: Does it promote student learning? *Higher Education*, 72 (5), 509-531.
- The National Center for Research in Vocational Education (NCRVE) Why organization are valuing and managing diversity. Diversity in Workforce Series (online) (cited December 16th, 2002). Available from <URL <http://ncrve.berkeley.edu/abstract/MDS-934/MDS-934-WHY.html>>.
- Tuckman, B. W. (1965). Developmental sequence in small groups. *Psychological Bulletin*, 63, pp. 384-399.
- Trevitt, A. C. F., Akerlind, G., Brack, C., Pettigrove, M. (1995, January). The role of student assessment: To gauge students' performance, to enhance learning and professional skills, or to inform program evolution? Paper presented for the 15th Annual Conference of the International Academy for Information Management for Department of Forestry, School of Resource and Environmental Management and Centre for Educational Development and Academic Methods in Australian National University.
- Frevitt, A. C. F., Pettigrove, M. (1995, January). Towards autonomous criterion-referenced assessment and self-assessment: a case study. Invited keynote paper at the 2nd European electronic conference on assessment and evaluation: recent and future developments, Feb 6-10. European Association for research into Learning and Instruction, SIG Assessment & Evaluation (EARLI-AE) List.
- Van Berkel, H. J. M. & Schmidt, H. G. (2000). Motivation to commit oneself as a determinant of achievement in problem-based learning. *Higher Education*, 40, 231-242.
- Vernon, D. T., & Blake, R. L. (1993). Does problem-based learning work? A meta-analysis of evaluative research. *Academic Medicine*, 68(7), 550-563.
- Watson, W. E., Kumar, K., Michaelsen, L. K. (1993). Cultural diversity's impact on interaction process and performance: Comparing homogeneous and diverse task groups. *Academy of Management Journal*, pp. 590-602.
- 7.essoules, R. and Gardner, H. (1991). Authentic assessment: Beyond the buzzword and into the classroom, in Peronne, V. (Ed). *Expanding Students Assessment*, Alexandria, VA: Association for Supervision and Curriculum Development, pp. 47-71.
- Zwaal, W. (2001). *The Drivers of Problem-Based Learning*. Leeuwarden, The Netherlands: Internal Publication.
- Yip, W. & Ghafarian, A. (1995, January). Problem-based learning assessment for information systems courses. Paper presented for the 15th Annual Conference of the International Academy for Information Management.