

DEFINING, PROFILING AND ACCOMMODATING LEARNING DIVERSITY IN AN INTERNATIONAL PBL-ENVIRONMENT

Gordon Lindsay Alcock¹, Henrik Blyt²

¹*G. L. Alcock, Faculty of Technology and Business, VIA University
College, Chr. M. Østergaards Vej 4, 8700 Horsens, Denmark
gla@viauc.dk*

²*H. Blyt, Faculty of Research and Development, VIA University College,
Chr. M. Østergaards Vej 4, 8700 Horsens, Denmark
hbl@viauc.dk*

Abstract

This paper investigates the wide diversity of learning experience, values and expectations of both students and lecturers in an international PBL environment. The results are based on 24 PBL-related learning parameters (inspired by Hofstede's cultural dimensions) in the form of two questionnaires – one for students and one for teaching staff. The result quantitatively documents and graphically illustrates the wide diversity of student learning experience, values and expectations and contrasts them with teaching staff.

The paper also documents follow-up research into 62% of the same group of students 18 months after the initial survey – to reveal the extent of accommodation and constructive alignment. The authors view the paper as 'action research' – the findings being specific to their institution, but could be applied to other PBL teaching and learning situations.

Key words

PBL, Constructive alignment, Learning diversity profile

Workshop Topics

Is learning always evaluable? Beyond Active learning

I INTRODUCTION

Over 40% of students at VIA University College (VIAUC) in Denmark are international students from widely differing cultures. Students in international project groups work in a PBL – Project/Problem Based Learning Environment.

Developing group of students into highly motivated and effective PBL teams is a

constant challenge. No two classes or semesters are the same and a crowded curriculum and complex projects puts pressure on ensuring that good ‘communities of practice’ are developed as quickly as possible. Most students arriving at VIAUC have little or no experience of working in a PBL environment.

To facilitate the rapid accommodation of such student diversities we considered how they could be documented and illustrated and how the results could be used to accelerate the assimilation and positive accommodation of learning diversity. Questionnaires were developed to gather empirical data from students and another teaching staff.

I.1 Research Questions

The focus of this paper is the variation in international students’ educational experience and expectations to help prepare them for the values inherent in VIAUC’s PBL-model. An important aspect of the justification behind our action research strategy is that it should contribute to further development by assimilating and accommodating the results into future practise.

- How can we define and illustrate the wide diversity of student and teacher learning values, experience and expectations?
- How can we define and illustrate the development and constructive alignment of students learning values over a realistic period of time?

II THE SURVEY

VIA University College’s student introductory process has been partly based on Hofstede’s [1] cultural studies. Students responded well to the theories and discussion, but often commented that the results and materials were ‘out of date’ and that the original ‘test’ of cultural dimensions had little to do with education. Hofstede’s research did not include many East European or Asian countries and many of our students originate from such countries.

II.1 The TESLLA Questionnaires

The questionnaires developed were based on Hofstede’s work on cultural variation with 24 paired values – 6 in each section. Hofstede’s four original dimensions were given educational ‘values’ to illustrate the students’ views on Power Gap, Uncertainty Avoidance; Individualism contra Collectivism and Masculinity and Femininity (Materialism/Humanism) in relation to their educational experience and previous learning environments.

The values defined reflect many of the common concepts associated with VIAUC’s PBL-model and the feedback that we have experienced over many years of working with international students. Responses were on a 12 point scale – in contrast to traditional 5 or

6 point Likert scaling - to encourage a wide diversity of responses to be recorded. This TESLLA (Test Like Learning Activity) tool [2] can be used by others to develop their own interpretations of Hofstede's original dimensions. The test was quantitative enabling easy graphic comparison and illustration of the results.

Originally there was only a student version. It led to a modified questionnaire so that teacher's opinions and values could be included [3].

We chose to 'test' 2nd semester students as they were into the routines of college life, without having been immersed in a full PBL environment – There is limited teamwork and a limited social/learning contract involved in the 1st semester. We reasoned that 2nd semester students would still be dependent on their inherent learning values –gained before entering VIAUC.

All data was gathered anonymously. Students and teachers were not compelled to take part in the survey.

II.2 Survey Methods

After an introduction to the questionnaire and what was involved in the TESLLA profile, students were asked to complete the questionnaire at the informal start of the 2nd semester.

They were free to sit together and discuss the questions in any group or formation that chose. Many sat with students from their own country – to make sure that they understood the concepts involved, but they defined their own personal TESLLA profile. Students kept a copy of their own profile for a later group profile included in their Portfolios. Teaching staff completed the corresponding questionnaire with remarkably aligned values.

This process was repeated 18 months later for 62% of the same students in their 5th semester and the results compared graphically with previous data. This was a significant percentage as many students from the original test were had other course commitments, exchanges etc. Repeating the TESLLA profile showed definite constructive alignment/accommodation of their original learning values. The test was anonymous as many international students have little or no experience in feedback opinions to teachers – some even regarding such a process with suspicion. Students then compared results as part of the initial team building procedures. Developing a climate of openness and appreciation of the wide diversities of international project groups are essential aspects of successful PBL team building – as expressed by Argyris and Schön [4]:

“Good learning takes place in a climate of openness where politics is minimized.”

We attempt to develop a climate of openness from the very start of the students' studies – involve them in sharing experience of previous learning and work rapidly through the 'Forming, Storming and Norming' team stages as defined by B. Tuckmann [5] and start

'Performing' as quickly as possible - in both product processes (which lead to the final project result) and process processes - often difficult to define, but central to real personal and professional development.

II.3 Limitations of our research

All The number of students taking part in the 5th semester survey comprised only 62% of those that provided data when in their 2nd semester. We could not cross check or compare original responses with the later. It is difficult to verify – or falsify - our findings of such action research due to its 'soft' nature, but the findings 'work for us'. Starting with 2nd semester students may also have meant that some accommodation of learning values had already taken place.

III BACKGROUND

Biggs [7] SOLO approach – the Structured Outcomes of Learning Objectives encourages correlation of learning aims and results. TESLLA profiles of student learning experience encourage correlation of their past learning values – which may be very different to the new environment they are expected to learn in.

Such values will always have to be explored – profiling them promotes exploration of them before students become immersed in the 'project' or 'problem' central to the concept of Problem Based Learning. This exploration may lead to gaining new competencies, attitudes and behaviour in any PBL approach. Developing class communities that "accept shared responsibility for common learning" requires values that may not be easily defined in any SOLO or similar taxonomic approach.

Our TESLLA profiles promote early discussion and help give students (E. Wenger) [8]:

“access to the resources necessary to learn what they need to learn in order to take actions and make decisions that fully engage their own knowledge ability”

Wenger also recognized the value of communities of practice seeing

“the importance of active participation in the practice of communities and of constructing identities in relation to these communities”

The 'Constructing Architect' education's initial 'learning to learn' phase stresses active participation to raise student's consciousness of constructing identities in the communities established in team-based PBL learning. While students are obviously held 'accountable for their own individual learning' VIAUC's PBL-model stresses that there is 'shared responsibility for common learning'. Basically, class 'Teams' are really learning groups – there really being only one team in each class – the class itself. Students 'sharing' knowledge with other learning groups is both encouraged and recognized. A Project Based Learning approach with each team producing an individual

design variation on a common theme – encourages them to share knowledge. A Problem Based Learning approach with greater diversity in project themes often has little or no commonality.

The TESLLA tool helps promote self-directed and interdependent group learning – not least, because it is introduced and discussed with the students so they understand the reasons and motives for using it. ‘Communities of Practise’ are not restricted to the professional world that awaits graduate students, but are actively encouraged within the College. The ‘Constructing Architect’ education is a ‘Profession’ bachelor degrees. Graduates contribute immediately to their professional community of practise in being capable of managing a building project.

G. Leinhardt [9] distinguishes between ‘Professional knowledge’ and ‘University knowledge’:

“Professional knowledge is functioning, specific and pragmatic. It deals with executing, applying and making priorities. University knowledge is declarative, abstract and conceptual. It deals with labelling, differentiating, elaborating and justifying”

This is an interesting contrast – VIAUC’s teaching ethos is essentially pragmatic – encouraging students to constructively align their competencies with the professional ‘community of practice’ that awaits them. This alignment process is also important in developing Communities of Practise among students.

Constructive alignment of learning processes maximises the potential advantages of learning experiences. Learning alignment inevitably happens, but it can also result in ‘misalignment’ with students blaming one another because their collective efforts have not been successful. Their individual competencies may be excellent, but combining them into community competencies may be beyond them.

K. Illeris’ theory [10] of a contemporary and comprehensive theory of learning was his own personal one and a combination of a variety of learning theories. He stressed two processes fundamental to learning – “external interaction with the surrounding social, cultural and material environment” and “an internal process of acquisition and elaboration”.

Illeris’ added three ‘dimensions of learning’ to the above – the Cognitive; the Emotional and the Social or environmental aspects of learning – involving cognitive knowledge and skills; ‘emotional feelings and motivation’ and ‘social communication and cooperation’.

Both his processes and dimensions are reflected in the model shown below – VIAUC’s model for PBL-based education.

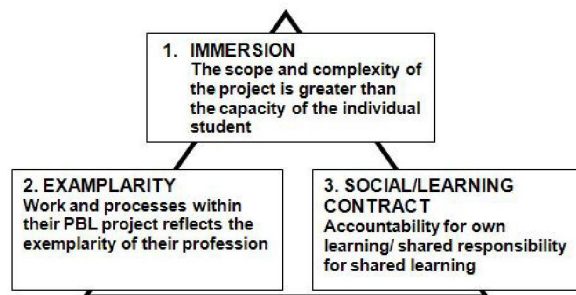


figure 1. Viauc's PBL-model

- *Immersion* - students are immersed in a project whose “scope and complexity is greater than the capacity of the individual student”. In other words the projects are too complex for one student to be able to complete on their own.
- *Exemplarity* - all work and processes related to the project are good examples of what is found in their profession.
- *Social/Learning contract* - while being accountable for their own learning, they also share responsibility for shared learning. Documenting sharing knowledge and helping others develop are two aims that are commonly stressed and assessed.

David Boud takes Biggs view of constructive alignment a stage further to the world of employment – aligning learning to the real world seeing critical reflection and self-assessment as a contrast to the traditional controlling roles of assessment. If we return to the concept of reflection Boud sees assessment as a magic mirror reflecting what students could become – “the ugly frog seeing his reflection as the handsome prince”, while traditional control assessment just reminded the frog of how ugly he was! If we continue with the metaphor our TESLLA survey gives the students a new ‘mirror’ in a new environment. Reflection in and on their previous learning actions and values (self-assessment) facilitates their understanding of the new PBL learning environment. Boud's main interest could be described as connecting higher education courses with the learning in which students are involved in after graduation – their professional careers. This is fundamental to profession bachelor degrees ensuring smooth entry to the job market. Boud [11]: saw educators vital role was:

“to prepare students for the future that is unknown to us and them. The unknown future creates great problems for learning and assessment now and will place demands on students for new knowledge and skills beyond anything they learn in their courses”

Boud saw many traditional assessment practices as ‘inadvertently deskilling’ students -

focusing attention on the immediate task of passing examinations or completing assignments, while distracting them from learning how to assess themselves and constructively align that with what they need to learn. In other words, lifelong learning requires students to become lifelong reflectors and to assess how they can develop the competencies needed after graduation.

Self and peer assessment are vital to this process. Our TESLLA activity reflects this – student’s start by assessing and reflecting on their learning values to adapt to others generalizations of learning. Boud also stresses the value of experience in learning:

“the role of building on students previous experience is becoming increasingly recognised”, “Before they can build on it they have to define it – define both what they have learned and how learnt best”

This all echoes Kolb [12]:

“learning as the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping experience and transforming it”

We understand acquisition and elaboration as being essentially the same as assimilation and accommodation – transforming and developing previous experience. ‘Grasping’ the opportunity that the profiles of previous learning experience gives students enables them to undergo what Cowan saw as Kolbian generalisation [13]:

“the whole pattern of the learning circle, for me, is to look for patterns within families of problems or tasks, which link them together because of the underlying framework, structure or shape of the plant”

Students can look for patterns within their learning profiles and hopefully develop a more acute awareness of what they have – or don’t have - in common with their fellow students and those that will be teaching them. It clearly illustrates the diversity inherent in any multi-cultural learning environment and adds to the understanding and appreciation of such diversity.

Accelerating the understanding of new concepts involved in a new learning environment adds to the effectively of learning. Biggs view of education as being “about conceptual change - not just the acquisition of information”, encourages the reconstruction of perspectives and development of widely diverse learning strategies. What may have been a very successful learning strategy in a previous learning situation, may not apply in a new situation.

Students embarking on studies abroad undergo a wide range of cultural experiences that may be very different from home. Students may not even have to travel - being in a very successful PBL team in one semester, may not guarantee success in adjusting to a new team in the followings semester.

Being able to promote success in any team is a competence highly desired by many graduates – not least potential project managers. It may be one of the most important learning outcomes of their education, but is rarely defined in any SOLO or other taxonomic approach.

Accelerating the successful adoption of such practices starts with reflection on previous practise. For some the variations upon entering a new learning culture are minimal, enabling rapid acceptance and accommodation of the new educational cultural norms. For others it may be a dramatic and demoralising culture ‘shock’. Profiling learning experience and learning values hopefully shortens the period of acclimatisation - it at least provides a basis for discussion to enhance learning – enabling students to identify personal and group competencies, learning aims and strategies.

III.1 Learning Environment

John Biggs – in ‘Teaching for Quality Learning at University’– quotes William Glasser’s approximate percentages that reflect on how people learn:

‘10% by what they read; 20 % by what they hear; 30% by what they see; 50% by what they see and hear; 70% by what they talk over with others; 80% by what they use and do in real life; 95% by what they ‘teach’ someone else’

The final three are very important in VIA’s PBL-model with students immersed in ‘real-life’ projects in learning teams, sharing knowledge; discussing often being in a ‘teaching’ role.

Dewey comments [14]:

“The most important attitude that can be formed is the desire to go on learning” – developing internal motivation”

Defining learning profiles promotes motivation and gives greater insight into the potential of their new situation. Increasing student’s responsibility for shared learning, relating it to real-life community practise; and developing internal motivation are all inherent concepts in ‘adult learning’.

Malcolm Knowles the so-called ‘founder or populariser of the term andragogy or ‘adult’ learning has become linked with the idea that adults are [15]:

“Self-directed learners who take the initiative to “diagnose their learning needs, formulate learning goals identify human and material resources; choose and implement appropriate strategies and evaluating learning outcomes”

Knowles saw the above as being vital to adult learning – in contrasting adults with young learners he placed emphasis on the students Self learning – a process that requires

maturity based on previous experience of learning, readiness and attitude to learn and – not least – their motivation to learn. Such maturity involves much ‘fuzzy’ knowledge, skills, attitudes and behaviors, which are rarely linked explicitly to formal learning outcomes. We have attempted to increase student and group ‘maturity’ by providing insights into how they function as individuals. Comparing their TESLLA profiles with others helps accelerate the assimilation and accommodation of group/team learning practices essential to successful PBL.

IV RESULTS

There was wide initial variation in the student profiles - in marked contrasts to the remarkably well-aligned teacher profiles. The 5th semester results showed clear alignment in most areas. Below are examples of strong and weak alignment across some of the paired value profiles.

IV.1 TESLLA profiles with very strong constructive alignment (5th compared with 2nd semester) data

Red represents 5th semester response Yellow represents 2nd semester response Green represents teacher’s response

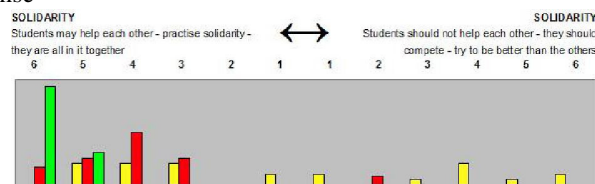


Figure 2 Solidarity

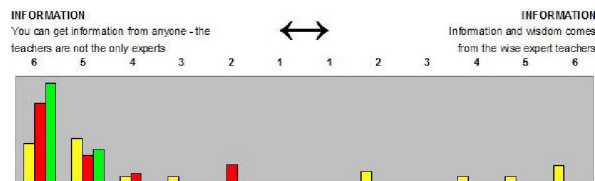


Figure 3 Information

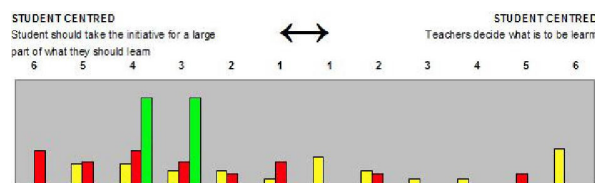


Figure 4 Student centred

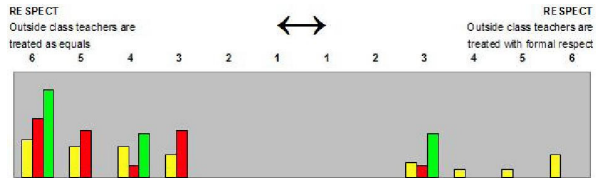


Figure 5 Respect

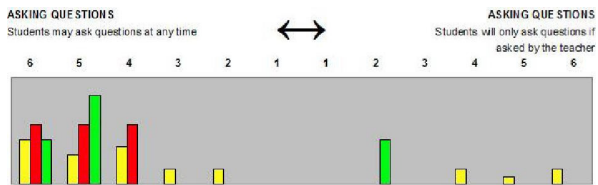


Figure 6 Asking questions

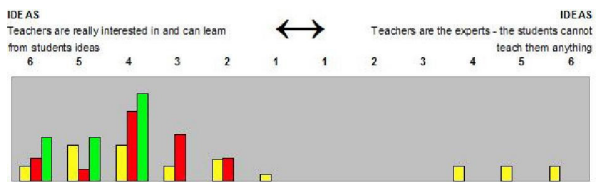


Figure 7 Ideas

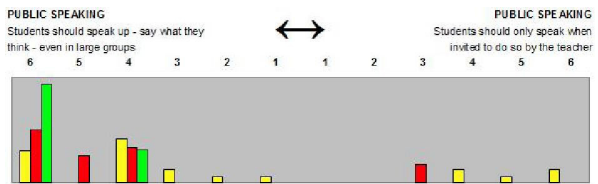


Figure 8 Public speaking

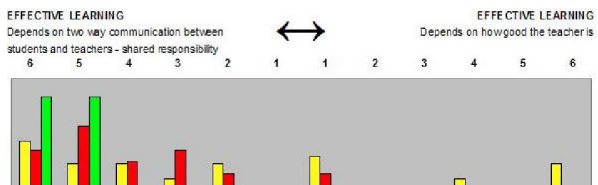


Figure 9 Effective learning

IV.2 TESLLA profiles with weak or negative alignment (5th compared with 2nd semester) data

These values promote discussion – their interpretation can be difficult, but they show that 5th semester students have not aligned their 2nd semester values with those ‘practiced’ or ‘preached’ by the teachers.

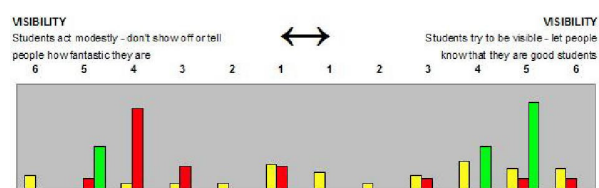


Figure 10 Visibility

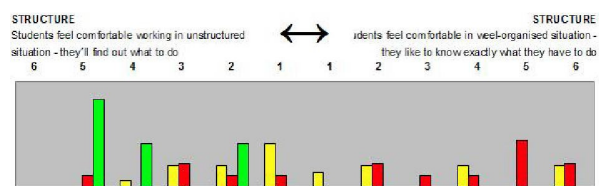


Figure 11 Structure

V CONCLUSION

The questionnaires based on 24 learning related values arising from the original work of Hofstede provided a TESLLA tool that enabled us to clearly document and illustrate the wide diversity of student and teacher learning experience, values and expectations.

Follow-up research into 62% of the same group of students 18 months after the initial survey revealed accommodation of the students’ original responses – clearly showing areas of strong alignment and also areas of more limited alignment.

The wide variation and marked contrasts between some student and the teacher profiles illustrates inherent problems in successfully introducing and constructively aligning students to a new educational approach.

While the mathematical significance of many of the factors involved in the survey could be documented more precisely, the graphic illustration of the results obtained gives an overall impression that is more readily accessible to those most likely to benefit from

using it – the students and teachers involved.

VI PERSPECTIVE

The TESLLA questionnaires can be used whenever team based PBL is practised - to encourage self-evaluation and discussion of student learning diversity. The teachers' questionnaire clearly documents teacher learning experience, values and expectations showing clear alignment of most teaching values. The process of using the TESLLA as part of the semester start up procedure is now an intrinsic part of our 2nd and 4th semester introductory procedure.

The profiling tool has never been intended to force accommodation or alignment upon students. All international students have to adapt and acclimatize to their new learning environment no matter where they travel in the world – one criteria for success as an international student being how rapidly they can adapt to a new learning culture. The results enabled us to document diversities between individuals and classes – and may help explain clear discrepancies in the way classes reacted to the same PBL program taught by the same group of teachers. They also encourage teachers to 'explore their learning values' – both individually and collectively – to see exactly what it was they believed they were doing and how it was being done. We believe that this tool adds greatly to the Social/Learning processes - vital to any group of students developing into a successful PBL team.

REFERENCES

1. G. Hofstede, "Culture's Consequences, Comparing Values, Behaviours, Institutions and Organisations across Nations", Second edition (2002).
2. G. L. Alcock, "TESLLA – Profiling student learning expectations", unpublished.
3. G. L. Alcock, "TESLLA – Profiling teacher learning expectations", unpublished.
4. C. Argyris and D. A. Schön, "Theory in practise – increasing professional effectiveness" (1992).
5. B. Tuckmann, Original "Forming-storming-norming-performing", unpublished.
6. G. L. Anderson and D. Heer, "The new Paradigm Wars – is there rooms for Practitioner knowledge in schools and universities" (1999).
7. J. Biggs, "Teaching for Quality Learning at University", Second edition (2003).
8. E. Wenger / J. Lave, "Situating Learning Legitimate peripheral participation" (1991).

9. G. Leinhardt, "Learning an Instruction – Integrating professional knowledge: The theory and practise of the theory" (1998).
10. K. Illiris, "Towards a contemporary and comprehensive theory of learning" (2003).
11. D. Boud, "Enhancing learning through self assessment 1995
12. D. A. Kolb, D, "Experiential Learning" 1984.
13. J. Cowan, "On becoming an Innovative University Teacher. Reflection in action" (1998).
14. J. Dewey, "Democracy in Education – an introduction to the philosophy of education" (1916).
15. M. Knowles, "Self directed learning – Andragogy in Action" (1987).