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Keywords
motivational, learning, approaches, orientations, students, constructively, methods, teaching, aligned

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Constructively Aligned Teaching Methods and Students' Approaches to Learning and Motivational Orientations

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Keywords : *Approaches to Learning, Teaching Approach, Constructive Alignment, Motivational Orientation.*

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I. Introduction

Students' approaches to learning are dependent upon their intentions and motives, and are associated with their prior knowledge and experiences (Biggs, 1999). According to Biggs, learning occurs when there is a personal interaction with the world. This has been described as the person-world relationship, which, it is suggested, is the "understanding" a person has, and what changes when that person learns (Fazey and Marton, 2002). As people learn, their conceptions change and they see and act in the world differently than they previously had. It is not the knowledge itself that causes this development, but the way the learner structures and reconstructs the information (Barab and Plucker, 2002). Therefore, one version of learning is about transformations that occur in individuals. It is facilitated by teachers who intentionally provide opportunities for these transformations, rather than merely aiming to transmit information.

Researchers argue that transformational learning is most likely to occur when the intended learning outcomes for an activity are obvious (Biggs, 1999), when students are motivated to achieve (Jacobson and Archodidou, 2000; Vosniadou, Ioannides, and Dimitrakopoulou, 2001), when risk taking is allowed (Freire and Fagundes, 1997), and when interaction and collaboration with others is encouraged (Soller, Goodman, Linton and Gaimari, 1998). It is closely aligned to a deep approach to study, in which learners focus on acquiring a holistic, reconstructed understanding of material, rather than on retention of facts for reproduction in an assessment (Marton and Säljö, 1976).

There are perceived advantages of a deep approach to study, as students are actively involved in constructing knowledge, rather than simply storing it for recall. This is supported by Barab and Plucker (2002; 2004), who discuss how in order to learn; there is a need to actively reconstruct understanding. With surface approaches, repetition and reproduction are the intention, rather than understanding. This approach has perceived disadvantages for higher levels of learning, as retention does not lead to long term learning, and does not allow the learner to operate at a higher level using, for instance, application of theory and abstract thinking (Spencer, 1999; Brown, Bull, and Pendelbury, 1997). As degree students are working at an educational level in which higher order thinking has to have primacy over an ability to recall and reproduce material, University teachers need to be given opportunities to understand the impact of these teaching and assessment methods on students' approaches to learning, providing them with time to reflect on their current practice and support them further develop their teaching design and practice. Approaches to learning are not fixed characteristics, but are enhanced or constrained by factors within the

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teaching and learning situation. To provide a framework for discussing the potential factors that enhance or constrain student intentions, Biggs (1999) proposed the 3P model of the interactions between the learner and the teacher. Based on Dunkin and Biddle's (1974) model, Biggs' version works at three points in time: before the learning (presage); during the learning (process); and at the outcome of the learning (product). The presage stage considers the student factors, such as relevant prior knowledge and experience, interest in the topic that they bring into the learning event, motivational orientation, and ability. It also considers the teaching context, which includes teaching methodology, assessment methods, and learning outcomes for the activity. These teaching based factors will interact with student characteristics during the learning-focused activity. Such characteristics include student approaches to learning, motivation, locus of control, and causality and perceptions of competence, which will interact with contextual factors to affect students' intentions, expectations, and behaviour to determine the outcome of the learning experience (Fazey, 1999).

As the Biggs' (1999) model indicates, no two teaching experiences can ever result in the same outcomes, as learning is dependent on a number of factors that vary from situation to situation. Teachers can construct a learning environment that provides the best opportunities for the students to acquire the learning goals. According to Shuell (1986), "If students are to learn desired outcomes in a reasonably effective manner, then the teacher's fundamental task is to get students to engage in learning activities that are likely to result in their achieving those outcomes" (p. 429). However, whilst no two teaching contexts are identical, one aspect of effective teaching must be constant; that is, all elements from learning outcomes to teaching methodology and assessment must be positively aligned with each other, in a manner that fosters a deep approach to learning as an integrated part of a whole system. What is now generally referred to as Biggs' Theory of Constructive Alignment (1996), proposes that student attributes, intentions, and behaviours must be congruent with the characteristics, demands, and intentions of the learning environment, if effective learning is to occur.

Whilst university teachers can see the sense of a constructive alignment between teaching approaches and intended learning outcomes, it appears that much teaching in the university is not constructively aligned with students' higher level expectations, intentions, or their learning needs. For example, Trigwell and Prosser (1996) showed that teachers who predominantly use a teaching style which transmits information, without providing opportunities for students to do much more than rehearse and recall what is given to them, use assessment methods that encourage learners to recognise and recall the "givens," rather than show understanding. Although this approach is aligned, it does not encourage a deep approach to learning. If students perceive the assessment to require them to reproduce facts, then they will more likely adopt an approach to learning that is surface. However, if an assessment is seen to demand that the student demonstrates understanding, then a deep approach to learning is usually selected. For learning in HE, it is this deep approach that is encouraged, as students are expected to be critical thinkers, and as such operate at higher order learning levels (Barab and Plucker, 2002; 2004). This means that teachers must adopt techniques that both encourage and provide opportunities for students to apply this approach where the students perceive the benefits of learning. Although it is recognised that there are a variety of approaches and styles of teaching, the important message is to select a methodology appropriate to the learning objectives of each particular learning situation.

Another factor that has a strong influence on students' behaviour is their motivational orientation. Motivation to achieve an outcome determines the relationship between intentions, behaviour, and outcomes. Deci and Ryan (1985) developed a model of motivational orientation based on a continuum of self-determination. This model suggests that individual reasons for acting may be intrinsically and/or extrinsically motivated, with the level at which individuals internalise their behaviour determining their place on the motivation continuum. Intrinsic motivation has been established as being closely associated with a deep approach to study (Fazey, 1999; Henderlong and Lepper, 2002).

Vallerand, Pelletier, Blais, Brière, Sénécal, and Vallières (1992) saw motivation occurring in a hierarchical fashion, with individuals exhibiting global motivational traits that can fluctuate in different contexts and situations. The global level of motivational orientation is a dispositional type of motivation, which although relatively stable, can vary depending upon the context. For example, a student may be prone to motivation for extrinsic reasons, in that they usually intend to gain good marks rather than learn for interest or excitement. However, in the context of learning about their hobby, they may be motivated by more intrinsic reasons. The most fluctuating level of the hierarchy is the situational level, which can alter from moment to moment. A student who may usually be motivated by, for example, introjected regulation, in that they behave in way that reduces anxiety and guilt, may at times be motivated to get a word of encouragement from their lecturer (external regulation), or have moments of real interest in learning (intrinsic motivation to know).

Whilst a student may come to the university with motivation at the intrinsic end of the continuum, dynamic interaction is required between the environment and the individual in order to maintain an intrinsic motivational

orientation (Biggs, 1999). This dynamic interaction is rarely achieved, and a progressive reduction of reported intrinsic motivation and deep approach to learning over the course of three years of undergraduate study is a well-recognised phenomenon (Kayle and Fazey, 2006).

Trigwell, Prosser and Waterhouse (1999) conducted a study about the impact of approaches to teaching on students' learning. They found that teachers who took a predominantly student-centred approach that focused on conceptual change had students who adopted a deeper approach to learning, whereas those lecturers who used a more information transmission technique that was teacher-focused had students who were more likely to use a surface approach. They also found that those students who adopted a deeper approach were more likely to demonstrate superior learning. The finding that was, perhaps, most important in their study, was that the level of information transmission that a lecturer demonstrated was unimportant if it was accompanied by high levels of conceptual change approaches.

Students' approaches to learning (APL) and motivational orientations (MO) are well-established as characteristics of students that affect learning and are moderated by aspects of the learning context (for instance, the approach to teaching, the assessment process, and the learning outcomes for the module). Figure 1 builds from Biggs' model of constructive alignment, taking the presage elements connected with the teaching context (the teaching methodology, the way students will be assessed, and the intended learning outcomes for the learning), and assessing how strongly aligned these three elements are, as well as how much they foster a deep APL. It then looks at the characteristics of the students in the process stage (MO and APL), and considers whether or not the teaching context is impacting on the learners' motivation and intentions.

The extent to which this alignment in HE is associated with positive or negative aspects of students' APL and MO was investigated in this study. Of interest is the extent to which the learning climate could influence students' APL and MO at a situational level. It is hypothesised that a robust positive alignment between the teaching elements that foster a deep APL would lead to students adopt deeper APL and demonstrate higher levels of intrinsic motivation.

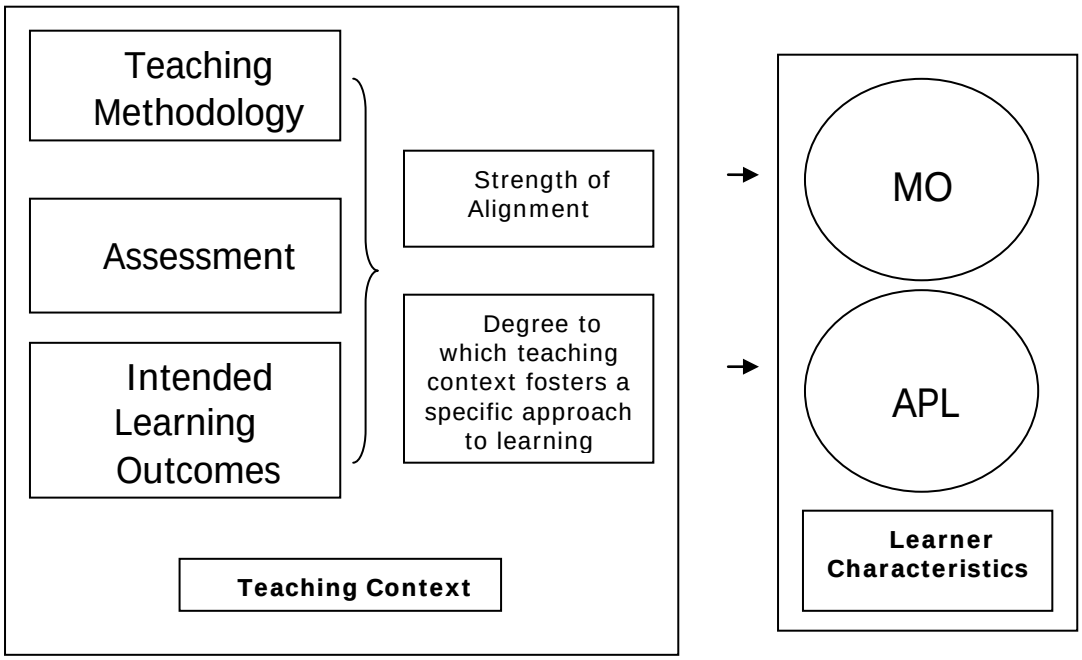

Fig.1 : Model of Constructive Alignment Impact on Motivational Orientation (MO) and Approaches to Learning (APL).

The aim of this study was to explore the impact of teaching approaches over time, building on previous findings by Fazey and Lawson (2000) and Lawson, Fazey and Fazey (2006), that found an alignment between teaching approaches and students' approaches to learning and motivation.

II. Methodology

a) Measures

- Approaches to Teaching – Approaches to Teaching Inventory (ATI) (Trigwell and Prosser, 1996;1999).

Teachers were measured on two scales: information transmission, which describes a teacher-focused strategy in which there is an intention of transmitting information that will be recalled by students; and conceptual change, which describes an approach where students are the focus of the teaching, with the teacher providing an environment in which students can construct and reconstruct their understanding.

- Motivational orientation - the Academic Motivation Scale (AMS) (Vallerand, Pelletier, Blaise, Briére, Senécal and Vallières, 1992).
- Approaches and Study Skills Inventory for Students (ASSIST) (Tait, Entwistle and McCune, 1998).

The ASSIST is a quantitative measure of student approaches to study, course and teaching preference, and definitions of learning. The ASSIST contains three sections covering conceptions of learning, approaches to studying, and preferences for different types of course and teaching. This study used the concepts of a learning section, which consists of six questions, to establish either transformational, reproductive, or application in the students' APL.

- Assessment Experience Questionnaire (AEQ) (Brown, Gibbs and Glover, 2003).

The Assessment Experience Questionnaire (AEQ) was developed to provide evidence about the extent to which students experience conditions of learning (Gibbs and Simpson, 2004). Two of the scales were used for this study – assignments and learning, and examination and learning. An additional six questions were added to this scale to evaluate the extent to which students perceived the module to be constructively aligned.

b) Participants

Participants (n=283; age range 18 – 49 years, SD = 4.5 years) were both undergraduates and postgraduates, from a range of levels of study in seven different degree programmes at the University of Wales Bangor. The sample was selected opportunistically from the four degree levels offered at Bangor University.

Table.1 : Student participants in the study

Module	Subject	Department	Level	Number of Participants
1	Coping Strategies in Education	Education	1	54
2	Sports Identity	Sports Science	2	41
3	Motor Control	Sports Science	1	36
4	Social Work	Social Policy	4	19
5	Basic Programming	Informatics	1	40
6	Sociology	Social Policy	1	23
7	Physiology	Sports Science	1	70
			Total	*283*

c) Procedure

The level of constructive alignment for each module was assessed using a pilot protocol. The process consisted of triangulating three sources of information, which were:

- Before their teaching session each lecturer completed the ATI. This measured their intentions to transmit information and/or change students' conceptions. Based on these scores, the lecturers were categorised as being normatively high or low in each of the conceptual change and information transmission approaches to teaching.
- Each lecturer was observed by the primary investigator during a one-hour teaching session, using a standardised peer observation process. This record was then analysed by the researcher to categorise the strength of alignment of the various elements of the teaching, and the extent to which a deep approach to learning was being actively encouraged in the students.
- An interview with each lecturer to ascertain their aims within the module and scrutiny of the module validation forms enabled intended learning outcomes, teaching, and assessment methods to be classified.

The information from these three sources was collated, and the researcher classified each module as having high, medium, or low alignment between all the elements of teaching (content, assessment process, teaching style, and encouragement of a deep APL). This decision-making process was based upon the learning

objectives set for each module in line with how these assessments were being assessed; for example, did the assessment criteria mirror the learning objectives? The teaching methodology used to reinforce this learning to help the students achieve these objectives was examined to ascertain if it aligned with the objectives and assessment requirements. It was important that the lecturer's perspective was used alongside the researcher's, to examine whether the practice matched with the intention of the academic. The students' responses to the AEQ were used as additional information to ascertain the level of alignment for each module.

A researcher considered the data independently to assign categories for the extent of alignment. Agreement was found at alpha = 0.92, using Cohen's kappa analysis.

Students completed the AMS and the ASSIST at the beginning of the module. They also repeated these questionnaires along with the AEQ at the end of the module. The questionnaire data collected was treated with the appropriate statistical analyses using SPSS v12.

d) Classification of constructive alignment of modules

Classification was based on two dimensions: the degree to which it was felt that the learning outcomes, teaching methodology, and assessment procedure were aligned with each other, and the extent to which these factors fostered a constructively aligned deep APL.

Module 1 – Education

This module aimed to explore coping strategies in education from both a student and an educator's point of view. The module was delivered using experiential learning, allowing for practice and variation. The assessment asked students to deliver a teaching session in a small group, followed by a write-up of this teaching design and delivery.

The lecturer scored 2.38 for information transmission and 4.00 for conceptual change. Students scored 3.96 for the constructive elements of the AEQ, with 3.56 for assessment and learning and 3.94 for examination and learning. It was classified as highly aligned, fostering a deep APL, as the module linked the learning outcomes and assessment procedures well, using teaching methodologies to engage the students in the subject as well as providing plenty of opportunity for practice and feedback. The assessment asked for the students to demonstrate their deep understanding by applying the theory into practice.

Module 2 – Individual Differences

This module examined the psychological factors that affect individual development. The teaching consisted of lectures that prompted students to interact through questions and answers, small group discussions, as well as small group seminars, examining relevant academic papers on the subject. The assessment was by a pre-seen question under examination conditions. Students were given a lot of opportunity to discuss their answers to this question, gaining feedback from peers and tutors.

The lecturer scored 2.25 for information transmission and 3.63 for conceptual change. A score of 4.08 for the constructive elements of the AEQ was given, with 3.61 for assessment and learning and 3.53 for examination and learning. It was also classified as highly aligned, fostering a deep APL. The students in this module were introduced to the learning outcomes for the course at the beginning of the module, including how they would be assessed. They were continually given chances to practice the assessment and to gain feedback through putting together a portfolio that could be used in the examination. The examination question itself asked students to demonstrate a high order of thinking about the subject.

Module 3 – Motor Control

This module was based on elements of motor control in sport. The material was delivered in a traditional lecture style, with an unseen, formal written examination at the end of the module.

The lecturer scored 3.64 for information transmission and 4.00 for conceptual change. A score of 3.41 for the constructive elements of the AEQ was given, with 3.42 for assessment and learning and 3.30 for examination and learning. This module showed moderate alignment, but did not predominantly foster a deep approach. It was based on information transmission, and did not allow students time to interact with the material. The assessment procedure required the students to regurgitate the information given, in order to succeed on the exam.

Module 4 – Social Work

This module was delivered to postgraduate students, to prepare them to take on various aspects of social work. The delivery consisted of some theoretical input, which was then used as the basis for small group discussion and application to real-life situations. Assessment was through students showing their understanding by applying it to case studies.

The lecturer scored 2.25 for information transmission and 3.50 for conceptual change. A score of 3.98 for the constructive elements of the AEQ was given, with 3.71 for assessment and learning and 3.90 for examination and learning. This was classified as highly aligned, fostering a deep APL. The module has a vocational focus too, as it is developing postgraduates for the career of social worker. The course therefore emphasises gaining a deep understanding to be able to apply in practice. The content and the assessment of the learning all concentrate on applying understanding in real-life situations.

Module 5 – Basic Programming

This module was an introductory module to computer programming. It was lecture-based, and delivered the theory behind programming. The delivery style asked the students to show their understanding in various examples throughout the module. However, these examples were repetitious, and so no variation was provided in practice. The assessment method was by examination using short answer questions.

The lecturer scored 3.13 for information transmission and 2.75 for conceptual change. A score of 3.88 for the constructive elements of the AEQ was given, with 3.53 for assessment and learning and 3.61 for examination and learning. This module was categorised as aligned fostering mainly surface approaches with some examples of deep.

This module did test the students on the learning outcomes specified, and the teaching provided the tools for them to achieve in the assessment. However, the method of assessment allowed students to succeed who repeated information they were given. No practice or feedback was supplied before the assessment.

Module 6 – Child Development

This module introduced students to the theory of child development in relation to the principles of social work. It was delivered in interactive workshops and was assessed by a group presentation and an essay. The lecturer scored 3.13 for information transmission and 3.88 for conceptual change. A score of 3.35 for the constructive elements of the AEQ was given, with 3.71 for assessment and learning, and 3.79 for examination and learning. This was classified as moderately aligned fostering a deep APL. Again, this module has a vocational bias to it; therefore, the theoretical material is treated in a manner so that it can be easily applied to real life situations. The students were able to work together to achieve in their assessment, and were given opportunities to get practice and feedback.

Module 7 – Physiology

The subject of this module was physiological matters in connection with sports science. It was delivered in a traditional lecture form for one hour per week, and in a laboratory setting for an additional hour. Assessment procedures were an unseen examination at the end of the module and a laboratory report.

The lecturer scored 3.63 for information transmission and 3.25 for conceptual change. A score of 3.49 for the constructive elements of the AEQ was given, with 3.48 for assessment and learning and 3.37 for examination and learning. There was some alignment that did not predominantly foster a deep approach. This module was heavily loaded with content, allowing some opportunities to interact with parts of the material during laboratory sessions. The assessment was closed book, so students were not able to approach the module in a manner that could guide their learning in order to achieve.

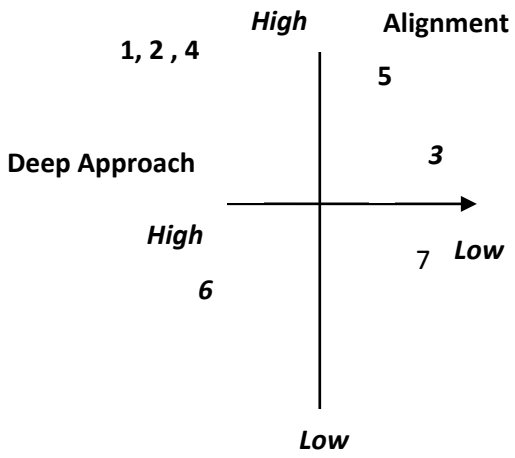

Fig.1 : Classification of Modules based on Alignment and Level of Deep Teaching Approach

III. Results

a) Students' approaches to learning

A Repeated Measures MANOVA was conducted with time as the repeated variable (λ,=0.998($F(154,6)=2.57$; $p<0.01$). No significant effects were found over time for approaches to learning. A significant multiple main effect for group was found in APL scores (λ,=0.522($F(6,167)=1.76$; $p<0.01$; $\eta 2=0.103$), with between factor tests revealing that there was a significant main effect for groups in the students' perception of the transform approach to learning data at the beginning of the module ($F(275,6)=3.32$:$p<0.01$; $\eta 2=0.067$). A Tukey HSD test showed that students in Module 6 (Child Development; high aligned, high deep) scored significantly higher in the transform approach than students in Modules 2 (Individual Differences; high aligned, high deep), 5 (Basic Programming; high aligned, moderate deep), and 7 (Physiology; moderate aligned, low deep) ($p<0.01$).

This significant main effect was still present at the end of the module ($F(6,197)=2.417$; $p<0.05$; $\eta 2=0.052$), with the students in Module 6 (Child Development; moderate/high) scoring significantly higher on transform approach than students in Modules 3 (Motor Control; moderate/low),5 (Basic Programming; high/moderate), and 7 (Physiology; moderate/low) ($p<0.05$).

There was a significant main effect for groups categorised by their preference for understanding approach to teaching ($F(6,274)=2.613$;$p<0.05$;

η2=0.054) at the beginning of the module, with follow-up tests showing that the students in Module 6 (Child Development; moderate/high) scored significantly higher than those in Module 7 (Physiology; moderate/low) ($p<0.05$). This effect was not significant by the end of the modules.

There was a significant main effect for groups in the information approach to teaching data at the beginning of the module ($F(6,275)=2.371$:$p<0.05$; η2=0.052). A Tukey HSD test showed that students in Module 4 (Social Work; high/high) scored significantly lower in this approach than those in Module 7 (Physiology; moderate/low) ($p<0.05$). This significant main effect was still present at the end of the module ($F(6,201)=2.689$; $p<0.01$; η2=0.174), with the students in Modules 6 (Child Development; moderate/high) and 4 (Social Work; high/high) scoring lower than those in Modules 2 (Individual Differences; high/high),3 (Motor Control; moderate/low) and 7 (Physiology; moderate/low).

b) Motivational Orientation

A Repeated Measures MANOVA (group x motivation x time) was conducted with repeated measures on time, using MO as the dependent variable. Although a significant main effect was not found, further analysis took place in order to investigate for changes over time in the individual modules. This post hoc analysis was the result of a belief that the overall effect was masked because the direction of change was different in different modules, cancelling out any overall change. Differences were found from the beginning to the end of the module for some of the elements of MO. Students in Module 2 (Individual Differences; high/high) scored significantly higher in "to experience stimulation," at the end of the module than at the beginning ($F(1,22)= -2.69$; $p<0.05$; η2=0.108). Students in Module 3 (Motor Control; moderate/low) had significantly higher amotivation scores at the end of the module than at the beginning ($F(1,19)= -2.83$; $p<0.05$; η2=0.052). Module 5 students (Basic Programming; high/moderate) had significantly higher levels of "identified regulation" at the beginning of the module ($F(12,1)= 2.19$; $p<0.05$; η2=0.067) than at the end, as did Module 7 students (Physiology; moderate/low) ($F(50,1)= -2.49$; $p<0.05$; η2=0.104).

The between factor tests showed there was a significant main effect for group in identified regulation at pre-test ($F(6,272)=2.894$;$p<0.05$; η2=0.054). Tukey HSD tests indicated that students in Module 7 (Physiology; moderate/low) scored significantly lower than did students in Module 4 (Social Work; high/high).

At the end of the module, students in Module 6 (Child Development; moderate/high) scored significantly higher than those in Module 5 (Basic Programming; high/moderate) on identified regulation.

There were significant main effects for group in amotivation ($F(6,273)=2.776$;$p<0.05$; η2=0.166). Follow-up tests indicated that students in Module 5 (Basic Programming; high/moderate) scored significantly higher than those in Module 6 (Child Development; moderate/high). Significant main effects were also found at the end of the modules, with students in Modules 3 (Motor Control; moderate/low),5(Basic Programming; high/moderate) ,and 7 (Physiology; moderate/low) scoring significantly higher amotivation than students in all the other modules.

IV. Discussion

Although some of the findings are equivocal, there is evidence in these studies that teachers' approaches to students' learning have an effect on students' learning approaches, and particularly on their motivation for study. However, the findings are not always clear-cut, and there are some unexpected results that are difficult to explain or interpret.

At the beginning of the module, those students taking the undergraduate social work module in Child Development scored significantly higher on the deeper APL than those taking individual differences, basic programming, and physiology. Although these differences were less pronounced by the end of the module, they were still present between Modules 6 (Child Development), 5 (basic programming), and 7 (physiology). It can be easily understood why those students undergoing a course that leads to a possible vocational career (social work) should begin the course with an approach to transforming their learning. Whilst students on this module still scored significantly higher at the end of the module when compared to those studying Physiology and Basic Programming (both classified as moderately aligned, but not fostering a deep APL), they did not score significantly higher than the students studying Individual Differences (high/high). This suggests that the students from the Physiology and Basic Programming modules had not approached their learning in a deeper manner as a result of their experience, whilst the students in the individual differences module had changed, and were no longer significantly different from the Child Development module students at the end of teaching. There was no significant change over time for students in Module 2 (individual differences) in transforming learning approaches, but their scores for transforming learning increased over the module. Therefore, even though it was not powerful enough to cause a significant change, the style of teaching did encourage the students to approach their learning in a deeper manner. These results were not as conclusive as the author had envisaged, but it was encouraging that the trends were in the predicted direction. Again, referring back to

Newstead's (1998) work that students' deep APL are prone to decline over the course of a module, finding a teaching approach that maintains students' deep approach is important. This reinforces that as well as designing assessments to maintain deep APL, it is also important to align these assessments with the learning objectives and teaching methodology, so that all the elements foster this deep approach.

Similar findings were found for the information category of the ASSIST inventory. Again, the Child Development module along with the post-graduate Social Work module scored significantly lower on information approaches than other modules (Physiology at the beginning; and Individual Differences, Motor Control and Physiology at the end of the modules). The assessment methods for the Social Work module were based on application of understanding in relation to vocational practice, and so it is understandable that these students rated the information scale low. The other three modules varied in the amount of alignment and the extent to which they promoted a deep APL. The two that were taught in a manner that fostered less deep learning (Physiology and Motor Control) assessed their students in a way that required a lot of memorising of facts. The remaining module (Individual Differences) did not ask students to reproduce a lot of facts, but it did require them to demonstrate understanding of a very broad range of theories. These students may have scored highly on the information element, as they felt overwhelmed by the vast amount of material within the module. This once again must act as a warning for staff when designing learning. Academic developers often warn of the dangers of incorporating too much content into modules, and this data shows the effect this high loading of material had in a subject on students' APL.

The only difference in the understanding classification of the ASSIST was between the Child Development module, and Physiology at the beginning of the module. Again, this may be due to perceptions that the students have of their subject matter, with those from the vocationally-oriented course believing understanding to be of importance in their learning, with the Physiology perceiving that other factors, such as the gaining and memorising information, were more important to achieve.

When changes were measured between the beginning and the end of the modules, no overall significant differences over time were found. However, if one looks at the trends of movement in the modules, it is evident to see that the two social work modules score lower on all scales by the end of the modules. This phenomenon is likely to be due to the model of awareness (Raiman, 1975), whereby the students over-estimated their commitment to learn at the start of the module, and had a more realistic perception of their learning by the end of the module. The other changes across time in the modules varied in terms of size and direction, but in general the modules classified as aligned and encouraging a constructive, deep approach recorded increases in the transform approach. This is of concern to teachers, as it was envisaged by this study, that these higher aligned modules that fostered a deep approach would develop students' intrinsic motivation and deep APL. This is the conscious/competent stage of Raiman's Model of Awareness (1975). This means that they have become aware of the expectations and standards required in their subject, and in light of this more realistic perception, re-assess their competence levels. This realignment of competence affects APL (Fazey and Lawson, 2000). This is a common occurrence in all learning situations, and is a stage of which teaching staff have to be aware. Structuring learning to help students to understand the criteria and standards required in their learning is vital for students to maintain a realistic perception of their achievements (O'Donavon, Price and Rust, 2008). This is achieved by making assessments and objectives transparent to students, by providing easily understood feedback that relates to the objectives, and by promoting self-awareness in students (Boud, 1995).

When MO was examined, it was again the Child Development module that was significantly different from Physiology at the beginning if the module, and from Basic Programming at the end in the subcategory of identified regulation. This related to the attitude that these student have in general to their subject, seeing a value in their learning because they are going to be expected to apply it in a real-life situation as part of a vocation. Physiology and Basic Programming were not seen in this light by their students, who were not able to see the importance of their learning. This may be because they were not taught in a manner that encouraged higher order thinking or they were not examined a way that made the learning meaningful.

When amotivation was considered, Basic Programming scored higher than Child Development at the beginning of the module, and Basic Programming, Motor Control, and Physiology were all significantly higher at the end of the module than all the other modules. These three modules (Physiology, Motor Control, and Basic Programming), were all classified as low in alignment and not encouraging a deep APL. It is of interest that these students scored higher than other students in the amotivation scale, indicating that teaching that does not challenge the learners does not motivate students to engage in learning. This is another strong message to academics to design their teaching to encourage a deep approach in an aligned manner to keep their students motivated.

The last analyses looked at differences over time for MO for each of the modules. Basic Programming and Physiology decreased in their levels of identified regulation over the course of the module, which means that the students were less able to

personally value the subject by the end of their learning experience. This is a concern, and could be explained by the method of teaching, that perhaps did not encourage an understanding of the value of the learning. This is a similar situation to the increase in amotivation found in the Motor Control module, which again was lacking in alignment and did not foster a deep learning approach. The individual differences module increased in the intrinsic factor "to experience stimulation" over time. This was encouraging to see that students were getting a 'buzz" out of their learning. The module was very challenging for the students, but even though they appeared to feel there was a vast amount of material to grasp, they were getting a sense of satisfaction from attempting the challenge. The fact that the students in the Social Work modules that were more highly aligned and fostered a deep APL had higher intrinsic motivation levels at the beginning may be the reason that there were no significant changes over time, to the result of a ceiling effect, as these students were already scoring high on the AMS, they did not increase these scores as a result of the module. The differences in these results show that motivation is influenced by the learning climate, and it is important to create a climate that will encourage intrinsic motivation, in order to promote more independent lifelong learners.

These findings are important to educators, as they emphasise both the importance of close alignment between aspects of teaching and the encouragement of deep APL. A teaching methodology that allows students to practice the objectives set out in the module in a variety of ways, with an assessment method that requires students to demonstrate their understanding of these learning outcomes, is necessary to foster a deep APL and high motivation. The assessment method within this aligned teaching method appears to be a driving force behind this impact on the students.

The author recognises this study has design weaknesses. The main criticism is the protocol used to categorise the teaching format into alignment and level of deep approach groups. Even though this protocol used a variety of data to triangulate findings, and protected against subjectivity by gaining perspectives from the author, a second researcher, the lecturer, and the students, there was still room for a biased rating within the methodology. This could have been alleviated if the categorisation was conducted blind, by researchers who were not aware of the hypotheses of the studies.

V. Conclusion

The results from this study are worthy of note by teachers in HE, but they are only the first step in arguing for change in HE practice. Whilst the statistically-based evidence remains tenuous, when combining results like the ones reported here with the understanding expressed by expert teachers in the classrooms of our universities (Fazey, Fazey and Fazey, 2005), it is certain that the way teachers approach their teaching influences the learning outcome (Kember and Gow, 1994; Trigwell et al. 1999). This study is complimentary to these previous works as it shows the impact of teachers approaches to teaching and students' learning behaviour. Clarifying what is understood by expert teachers, and the dispositions that expert teachers possess is still a methodological challenge. The approach adopted by teachers is dependent on their beliefs and assumptions – not only about learning and teaching but, perhaps more fundamentally, about what constitutes "knowing" in a particular subject domain.(Bain, 2000; Quinlan, 1999).

In order to change how people teach, the way they conceive teaching and learning must be changed (Trigwell, 1995; Trigwell and Prosser, 1996). Further demonstrations of the powerful links between teachers' orientations to student learning, their own teaching approaches, and their underlying beliefs about learning and teaching are needed for beginning professionals. Initial programmes of training for academic staff new to teaching in HE should provide such theoretical and research evidence to their students. Programmes that provide an academic basis for beginning teachers that allows them to test for themselves the efficacy of their own teaching are an effective way to develop an understanding for a long-term impact on an individual's teaching. As Williams and Burden (1997) said, Teachers' beliefs about what learning is will affect everything they do in the classroom, whether these beliefs are implicit or explicit. Even if a teacher acts spontaneously, or from habit without thinking about the action, such actions are nevertheless prompted by a deep-rooted belief that may never have been articulated or made explicit. (p.56)

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