

Blended Learning Environments: Students report their preferences

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Abstract

The goal of this research was to investigate tertiary students' experiences and satisfaction with aspects of the online learning environments together with their experience of the physical learning environment. It was hoped that some guidelines for an ideal combination of newly emerging learning environments blended with traditional physical environments would be developed based on this study and analysis. The wider study that this research is based upon attempted to synthesise the student survey data, with discussion comments from tertiary students and from tertiary staff, further refining a proposed blended learning environment model. However, this particular paper reports primarily on the initial results of the quantitative student survey results.

The work of Walberg (1976) and Moos (1974) led to the development of a variety of learning environment instruments. The various types of learning environment instruments have similar design principles, with broad scales measuring student perceptions in each broad area. The *Web-based Learning Environment Instrument* (WEBLEI) (Chang & Fisher, 2003) was developed to gather quantitative data on students' experience of e-learning systems in tertiary environments (Chandra & Fisher, 2006).

As part of this evaluation, an adapted Web-Based Learning Environment Instrument (WEBLEI) survey was administered to a sample of tertiary business and information technology students at a New Zealand institute of technology (Eastern Institute of Technology).

Keywords: Learning Environments, Blended learning, e-learning, tertiary IT strategy, quantitative surveys

1 Introduction

To enable tertiary institutes to create positive and supportive learning environments and to effectively utilise the online learning environment more consideration will need to be given to the ideal blended situation. It is possible that a strong push towards pure online environments may undermine the geographical uniqueness of many small to mid-sized institutes of technology and polytechnics and universities in New Zealand. Any serious consideration of the learning environment for the future must attempt to reconcile the rapid growth of the online e-learning environment and the strong history of real-world environments.

Universities and tertiary institutes that completely embrace online e-learning without due regard to the effects on the traditional learning environments which students still appreciate and rely on, may risk imbalance in their overall learning environment. Few examinations have been documented on the flow-on effect on traditional courses at higher levels of the increasing flexible delivery programmes at the lower levels in the tertiary sector. This provided the impetus for a unique look at the cross-channel effects of different learning environments in this study.

The objectives of the overall research project were to:

1. provide further confirmation of the WEBLEI in terms of its appropriateness within the tertiary environment and usefulness for evaluation of online and physical learning environments;
2. investigate student experiences and perceptions of learning environment factors within the online environment;
3. investigate student experiences and perceptions of learning environment features within the traditional environment;
4. investigate associations between gender, age, level of study, IT and student learning environment preferences; and
5. background the quantitative data with descriptive comments from the students and tertiary staff to provide a further qualitative foundation for a recommended mix for the blended learning environment.

This paper focuses on research objectives 2-4.

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2 Limitations of the Study

The sample for this study comprised approximately 50% of full-time students in the Business and IT Faculty at the Eastern Institute of Technology (EIT). The sample size, and the fact that only one institution was sampled, limits to some degree what can be extrapolated to the New Zealand or Australian tertiary sector. Comments from the students and staff that were recorded were reasonably open-ended and these opinions may not be fully representative across other Faculties or other tertiary institutions. The students involved with the study were primarily campus-based traditional students who were not totally dependant on the e-learning systems at EIT, however they all had access to the EIT online learning management system (Moodle).

3 Methodology

The WEBLEI instrument contains four scales as outlined in Figure 3.1.

<p><i>Scale II</i> Co-participatory INTERACTION Participation, collaboration and cooperation</p>	<p>Scale I Emancipatory ACCESS Virtual subject</p>
<p>RESPONSE Perceived student responses <i>Scale III</i> <i>Qualia</i></p>	<p>RESULTS Scope, structure, content, learning objective <i>Scale IV</i> <i>Information Structure and Design</i></p>

Figure 3.1. WEBLEI scales (Chang & Fisher, 2003).

Although the WEBLEI was seen as the main instrument for this study, some changes were foreseen for its adaptation to the tertiary environment and specifically the Eastern Institute of Technology environment. Also, some additions were seen as beneficial to explore the balance and tension between campus and online learning environments as this study sought to recommend optimal combinations of learning environments.

A number of recent studies have validated the use of the WEBLEI instrument. For example, Chang and Fisher (2003) described a study with 344 students using a web-based learning management system at Curtin University and confirmed that the concept of online learning was received positively by the majority of students. A number of other studies have confirmed the effective use of the WEBLEI instrument and the generally positive effect of web-based learning systems on the learning environment

(Chard, 2006; McDonald, 2002; Picciano, 2006; Quinton, 2006; Wheeler, 2006).

Table 3.0 outlines all 24 questions contained within the adapted WEBLEI instrument used in this study.

Table 3.0

Adapted Blended-mode WEBLEI Scales and Items

Scale I: Access

1. I can access the learning activities at times convenient to me.
 2. The on-line material (Moodle) is available at locations suitable for me.
 3. I can use the time saved in travelling and on campus class attendance for study and other commitments.
 4. I am allowed to work at my own pace to achieve learning objectives.
 5. I decide how much I want to learn in a given period.
 6. I decide when I want to learn.
 7. The flexibility allows me to meet my learning goals.
 8. I prefer online learning rather than real-world classroom learning from a lecturer.
-

Scale II: Interaction

1. I communicate with other students in this subject electronically.
 2. In this learning environment, I have to be self-disciplined in order to learn.
 3. I have the autonomy to ask my tutor what I do not understand.
 4. I have the autonomy to ask other students what I do not understand.
 5. Other students respond promptly to my queries.
 6. I would find it difficult to study on this course without regular interaction with the Moodle resources.
 7. I regularly interact with Moodle (at least twice a week).
 8. I felt there was an "online community" with other students on the course.
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Scale III: Response

1. This mode of learning enables me to interact with other students and the tutor asynchronously.
 2. I felt a sense of satisfaction and achievement about this learning environment.
 3. I enjoy learning in this environment (Moodle).
 4. Moodle is no substitute for on-campus classes.
 5. It is easy to organise a group for a project.
 6. It is easy to work collaboratively with other students involved in a group project.
 7. The web-based learning environment held my interest throughout my course of study.
 8. I felt a sense of boredom with the online material towards the end of my course of study.
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Scale IV: Results

1. Each Moodle course is setup clearly with learning objectives clearly stated.

2. Links to other websites are no substitute for printed references or articles.
3. The structure keeps me focused on what is to be learned.
4. I am happy to print lecture and exercise material from Moodle.
5. I can see the connection between the Moodle course and the campus course.
6. The subject content is appropriate for delivery on the Web.
7. The presentation of the subject content is clear.
8. Online resources plus the classroom teaching enhances my learning.

The five point response scale included the possible range of responses: 1. Never, 2. Seldom, 3. Sometimes, 4. Often and 5. Always.

3.1 Means and Scale Results

The mean scores, as displayed in Table 3.1, (3.62, 3.31, 3.06, and 3.83) for the four scales show that on average the student respondents gave a response of “Sometimes” to “Often” on the items in these scales. This would indicate a favourable response on most statements with an overall mean of 3.45 which indicates a relatively high mean over the 32 statements.

Table 3.1

WEBLEI Descriptive Statistics

Scales	Items	Valid Cases	Mean	sd
I: Access	8	140	3.62	0.39
II: Interaction	8	142	3.31	0.33
III: Response	8	128	3.06	0.37
IV: Results	8	142	3.83	0.39

The mean score of Scale I (Access) of 3.62, displayed in Table 3.1, indicates that students in the Faculty of Business and Computing at EIT generally agree that they can access the online learning materials within their overall mixed learning environment in a reasonable manner. The Moodle learning management system at EIT seems to provide them with autonomy of choosing when and where to gain access to learning materials. One key statement (Q.8) within this Access section asked whether the student prefers online learning compared to classroom learning. It appears that students who are comfortable with online e-learning and are satisfied with the provision and access to the online learning environment may still have a strong preference for either online learning or for classroom environments. This is reflected in the fact that approximately 60% of respondents replied “never” or “seldom” to this statement, indicating that students still value the real-world physical interaction with teachers despite an accompanied satisfaction with an online learning environment running in parallel.

The mean score of Scale II (Interaction) of 3.31, reflecting the range of “sometimes” to “often”, shows that

the students at EIT believed they were able to participate and interact with other students within the online environment. Students generally sensed that there was a form of online community with lecturers and other students in the general learning environment. This is an important aspect of the blended learning environment as students may learn more from engaging in the Faculty community than studying alone.

A mean score of 3.06 was calculated for Scale III (Response), and indicates that generally students feel a reasonable sense of achievement and satisfaction after using Moodle to help complete their particular course. The mean score of 3.06 was the lowest score of the four scales and may reflect some disdain for group work (Q.22) in general and some feedback that online courses have difficulty sustaining a high level of interest throughout a semester period. The Response scale includes feedback from students on how they experience and perceive the web-based system in terms of interaction with other students and the lecturer. The mean score of 3.06 would indicate less agreement with this interaction than other aspects of the web-based learning environment.

Finally, Scale IV (Results) had a mean score of 3.83, shown in Table 3.1, which would indicate that students at EIT agree that the learning aims and general organisation of the online course materials were crucial in helping them in their studies. Variations between classes of students may of course reflect different lecturers’ level of skill in making use of the Moodle features and the quantity and quality of learning materials made available to each different class. This mean score of 3.83 in the Results scale was the highest score of the four scales of access, interaction, response and results. Student respondents were positive towards the presentation and effectiveness of the Moodle environment at EIT admitting that overall the Moodle courses were improving their learning and results regardless of how integrated the online learning was structured. The high mean on this Results scale was in spite of the statement regarding printing online material having a lower score than most other statements on the entire WEBLEI survey.

3.2 Gender Differences

Gender differences in the online and blended environments were examined using an independent sample test in SPSS with the four WEBLEI scales as dependent variables. Males (n=64 or 47%) and females (n=71 or 53%) were represented reasonably equally in the study.

Table 3.2

Scale Means and Standard Deviations for Male and Female EIT Students’ Scores on the Four WEBLEI Scales

Scales	Males		Females		F Value
	Mean	SD	Mean	SD	
Access	3.65	.50	3.60	.68	3.42
Interaction	3.29	.49	3.36	.65	4.18*

Response	2.99	.50	3.07	.79	9.71*
Results	3.76	.50	3.93	.57	1.22

* $p < 0.05$ males $n = 64$ females $n = 71$

Statistically significant differences in students' mean scores were apparent in responses to the Interaction (Scale II) and Response (Scale III) scales as shown in Table 3.2. Female respondents scored greater on those statements relating to student interaction with each other in the online environment, and on those statements relating to group work and positive response to the completed course. These differences may generally indicate that females are more likely to interact with other students in an online environment and also respond more positively to undertaking study online.

This finding may have implications for any proposed ideal blended learning environment. Any mechanisms aimed at improving interaction and response by online means or through improvement in other communication vehicles will be positively received by students, particularly females. Another possible interpretation of these results is that females may act as an effective catalyst within groups of students where good interaction, online and in classroom situations, is desired. This may have implications for courses which are populated with predominately males, and may imply that less online interaction between male students and their teacher may occur.

3.3 Year Differences

There were no significant statistical differences between the three year levels of the student respondents. The spread of students in year levels showed as: Year 1 ($n=57$ or 42%), Year 2 ($n=33$ or 24%) and Year 3 ($n=45$ or 33%). This even result across all year levels for each of the four scales of the WEBLEI may indicate that final year students do not perceive their use of the online learning environment as any more critical than the first year students. There are perhaps different, yet still important reasons, for engaging online and on-campus regardless of the stage of the tertiary student. Year 1 students may have a greater urgency for access to materials online, while the final year student may enjoy the greater flexibility the online environment gives and may spend less time on campus. So each year group may have a similar level of satisfaction with online engagement yet this satisfaction may arise from different reasons and motivations. In summary, it appears there is no significant difference in the level of appreciation, usage and perception of the online component within the overall blended learning environment across the three year levels.

The implications for any recommended blended learning environment may be influenced by this evenly distributed positive response from a wide selection of student levels. The factors that create an optimal blended environment may be effective across a variety of student levels (academically and institute embedded). This may imply that a completely separate mix of flexible, online, web

and classroom-based environments for Diploma, Degree and Certificate programmes may not be necessary.

3.4 Age Differences

Table 3.4
Scale Means for Age Ranges of the EIT Students' Scores on the WEBLEI

Age	Mean	SD	F Value
Access			
16-20	3.76	.54	
21-25	3.64	.55	
25-40	3.53	.77	
40 or more	3.50	.44	1.370
Interaction			
16-20	3.44	.51	
21-25	3.33	.49	
25-40	3.27	.67	
40 or more	3.20	.65	1.060
Response			
16-20	3.18	.61	
21-25	3.22	.59	
25-40	2.88	.75	
40 or more	2.83	.64	3.073*
Results			
16-20	3.81	.49	
21-25	3.79	.55	
25-40	3.80	.60	
40 or more	4.05	.54	1.525

* $p < 0.05$

Student respondents at EIT were divided into four categories; (16–20 years), (21–25 years), (25–40 years), and 40 years and over. There were no significant statistical differences between the age levels for three (Access I, Interaction II and Results IV) of the four WEBLEI scales. However, there were statistically significant differences between age level groups within the Response scale III. The age levels 25 – 40 years and the 40 years and above both reported lower agreement levels than average within the Response scale. Table 3.4 presents the means for all four age groups within the four statement scales. It appears that older students may experience less satisfaction with the responsiveness of other students using the learning management system as they may have a greater expectation of participation by other students.

Comments within the discussion questions also supported this concept of older students, 25 years and older, having a higher expectation of themselves, of the course they were enrolled in, and the resources available to them. This higher level of expectation may be manifest in an online web-based learning environment where these students expect most other students in their course to be adding comments within the discussion forums, posting

material on the wikis, and generally communicating online via chat mode or email. When these mature students discover that only two or three students and the lecturer are actively participating online, on a course with 30 students enrolled and attending physical classes, they may experience some disappointment with the reality of online communication and engagement.

Younger students, under 25 years of age, may hold a more pragmatic viewpoint of navigating an online course and not have a high expectation of frequent online communication and responsiveness. Some comments from the discussion questions confirm this attitude where younger students are satisfied with informational content provided online, together with clear assessment definitions, so these students just “get on with the course requirements” regardless of the paucity of online responsiveness.

4.0 Overall Results for all WEBLEI Questions

Table 4.0
Descriptive Statistics of all Questions of the EIT WEBLEI

Aspects	Question	Descriptive Statistics		
		Valid Cases	Mean	sd
Scale I: Access				
Access to learning	1	151	3.70	.61
Moodle Available	2	148	4.41	.75
Use saved time	3	147	3.56	1.09
Work at own pace	4	146	3.61	.93
Decide how much	5	145	3.80	.99
Decide when learn	6	142	3.89	.98
System flexible	7	146	3.85	.87
Prefer online learn	8	149	2.82	.95
Scale II: Interaction				
Communicate other students	9	149	2.19	.97
Disciplined learner	10	147	4.05	.90
Autonomy ask tutor	11	148	3.82	.93
Autonomy to ask students	12	147	3.45	1.02
Students respond online	13	143	3.12	1.06
Difficult without Moodle	14	149	3.44	1.12
Use Moodle regularly	15	151	3.97	1.12
Online community	16	146	2.33	1.00
Scale III: Response				
Interact online	17	145	3.34	1.05
Satisfaction learning environ	18	144	3.28	.88
Enjoy Moodle environ	19	144	3.45	.97
Moodle no substitute	20	142	2.44	1.21
Moodle group work	21	136	2.85	1.01
Moodle helps group work	22	137	3.00	1.02
Moodle interesting	23	142	3.12	.93
Bored with online work	24	140	3.11	.90
Scale IV: Results				
Moodle courses clear	25	142	3.83	.90
Links no substitute	26	141	2.87	.90
Structure keeps focus	27	142	3.68	.85
Happy to print material	28	144	3.92	1.10
Moodle & Campus connect	29	144	4.10	.79
Moodle content suits Web	30	143	3.96	.79
Presentation of content clear	31	142	3.94	.83
Online + classroom helps	32	142	4.29	.73

4.1 Access Scale Commentary

The average response of 2.82 on statement 8; “I prefer online learning rather than real-world classroom learning from a lecturer” is lower than most responses on the WEBLEI, as shown in Table 4.0 Analysis of individual responses shows a wide divergence of responses from five to one. This may reflect some strong feeling from

students that classroom learning is still valued regardless of the extra value that has been added by the online systems. Statement 16; “I felt there was an ‘online community’ with other students on the course”, had a mean response of 2.33 which is significantly lower than most other statements on the WEBLEI. This may indicate that EIT students using Moodle do not utilise the online forums, email and chat facilities, and that lecturers in charge of Moodle courses do not actively encourage or require student participation in the online forums. There is potential for an ‘online community’ to emerge and commentators are enthusiastic about the ‘virtual community’ potentially surrounding online courses, however that reality is yet to emerge on the EIT virtual campus.

4.2 Interaction Scale Commentary

The mean response of 2.19 on statement 9: “I communicate with other students in this subject electronically” is comparatively low and signifies disagreement with this statement. Comments from students about this issue indicate the reasons for the low student-to-student communication online include that there is no compelling reason for this idealised communication. The course requirements in most EIT online or blended courses do not specify electronic communication or attempt to measure the activity. In one example, lecturers set up the online forum as a mechanism for students to record and display a portion of their assignments. This illustrates that just as in a traditional classroom environment, there needs to be a motivation for utilising group discussion or peer interaction, although teachers can encourage this without compulsory assessment requirements.

Students also indicated in relation to statement 9 that as the semester advanced they simply wanted to “get the information” from the Moodle course and apply this to the assignment or assessment and complete their requirements. For these students any interaction electronically was an optional feature and enjoyed, but was not viewed as essential for completing requirements. Lecturers and students commented in their discussions that online interaction often just “happened organically” depending on the mix of students, how many were geographically distant, and whether one or two students acted as a catalyst for sharing information and encouraging communication.

The mean response of 2.33 to statement 16: “I felt there was an online community with other students on the course” also reinforced the student’s response to statement 9. This relatively low response illustrates the difficulty of creating an authentic community online at a similar level to the physical campus community where everyday events and interaction occur spontaneously.

The highest mean scores in the Interaction scale were statement 10; “In this learning environment, I have to be self-disciplined in order to learn” (4.05), and statement 15: “I regularly access Moodle (at least twice a week)” (3.97). This average response would imply that generally students were aware that increased motivation was

required to regularly glean information from the online learning environment. The mean score of 3.97 for regular access (Q.15) confirmed that for this sample of blended Business and Computing Faculty students that the Moodle courses were being utilised at least twice a week. On an individual course basis lecturers can check within Moodle the last access date and time for each individual student. This can be a useful feature allowing lecturers to make enquiries on students who have not accessed course materials for some weeks or at all. The WEBLEI survey indicated that EIT students were aware of the requirements to stay disciplined with their online course material access, and also indicated that EIT students did in fact regularly access the online course materials.

4.3 Response Scale Commentary

The majority of the students in the sample indicated a high level of enjoyment with the Moodle courses provided even though in most cases the students were not totally dependant on the online resources. The student respondents indicated a mean score of 3.45 on statement 19: "I enjoy learning in this environment". This may indicate a generic willingness and enjoyment of Internet-based course materials, and may also indicate satisfaction with the quality and features of the specific EIT Moodle enabled systems. This positive satisfaction rating for online enjoyment would tend to indicate that tertiary students are not resistant or dissatisfied with the provision of online learning environments at any level of blended delivery. EIT academic management would view this result positively given that a wide range of quality and quantity of resources would be experienced by the students in this sample. Some lecturers may have only uploaded course outlines and skeleton lecture notes, while other lecturers may have offered a full featured set of resources utilising many features of Moodle.

The mean score of 2.44 for statement 20: "Moodle is no substitute for on-campus classes" provides the lowest score within the Response scale. It appears opinions are divided on this issue as some respondents fully agreed with this statement while others strongly disagreed. The comments within the qualitative section discussed in the wider study confirm this polarising of students with some strongly maintaining the necessity of the traditional classes despite the services of online systems. However, the mean result would indicate that a slight disapproval of this statement (20) overall is confirmed. We could therefore reverse this statement to say that "Moodle is a reasonable substitute for on-campus classes" and say that student have slightly agreed with this statement. This may indicate that students can visualise a future situation where they experience more of their classes purely online.

4.4 Results Scale Commentary

The highest average score (4.10) within the Results scale was for statement 29: "I can see the connection between the Moodle course and the campus course". This can be seen as a positive result for the concept of a blended course with students expressing agreement with the conceptual connection between the learning environment

in physical lectures, laboratories, and tutorials with the content and interaction within the related Moodle-based course material. The types of connections that students may perceive may include the course description, the calendar and planning, the academic content, and the electronic interaction. Lecturers have opportunities to strengthen the links between physical classes and content by actually navigating the online LMS and displaying this on the class projector for all students to see. This high score relating to the perceived connection between online and campus resources may indicate that EIT lecturers are performing well in this area and are aware of the need for academic alignment within the blended environment.

The lowest mean score of 2.87 within the Results scale was statement 26; "Links are no substitute for printed references or articles". This may imply that generally students did in fact value the web-links offered within the online environment reasonably highly. However, this average result is non-conclusive and may also imply a "neither agree nor disagree" opinion by the students. Some students agreed strongly with this statement while others strongly disagreed. Discussion comments by students showed that some students found themselves confused with too many Internet links causing those students to be unsure whether the links were compulsory reading or placed by the lecturer as general background. They also made comments that too many links may leave them with a concern that they may be missing some material if they do not investigate all the links offered within the Moodle course.

4.5 Overall Student WEBLEI Results

Overall the results from the WEBLEI survey were positive with students expressing general satisfaction with their use of online or flexible learning environments. The mean result for the Access scale was 3.62, Interaction scale 3.31, Response scale 3.06, and the Results scale mean result was 3.83. This would also provide a satisfactory result if EIT was using this WEBLEI instrument as a general faculty satisfaction evaluation feedback mechanism. The Response scale scored the lowest average of the four scales probably due to a perceived low level of interaction and group work currently experienced by EIT students.

If a tertiary institute were to implement wide ranging improvements and enhancements to its online and blended learning environments, this WEBLEI could be used before and after any such implementation to test the student satisfaction and response to these initiatives. However, it should be cautioned that student responses to the WEBLEI may also be influenced by the personality and pedagogical skill of the teachers involved and therefore the WEBLEI results may not be simply evaluating the efficacy of the online mechanisms used in conjunction with an ideal blended learning environment but also individual lecturer effectiveness.

All of the students, with the exception of three purely online students, would be classed as participants within a blended learning environment (campus and online). Within this blended environment, the main emphasis of

the courses that the student respondents were involved in during this research was the traditional on-campus course supplemented with online or flexible delivery materials. In this sense, the online environment is currently supplementary to this case study with a classroom-based and timetable course construct.

4.6 Key Individual Statements

Table 4.1
Blended Learning Environment Items

	Item 8	Item 20	Item 26	Item 29	Item 32
Mean	2.82	2.44	2.87	4.10	4.29
Valid Cases	149	142	141	144	142
sd	0.95	1.21	0.90	0.79	0.73

Item 8: I prefer online learning rather than real-world classroom learning from a lecturer.

Item 20: Moodle is no substitute for on-campus classes.

Item 26: Links to other websites are no substitute for printed references or articles.

Item 29: I can see the connection between the Moodle course and the campus course.

Item 32: Online resources plus the classroom teaching enhances my learning.

Within the adapted WEBLEI for EIT, there were several key statements which were of special interest to this study because they reflected a potential tension between online learning environment features and traditional classroom delivery. These items included item 8; “I prefer online learning rather than real-world classroom learning from a lecturer”, item 20; “Moodle is no substitute for on-campus courses”, item 26; “Links to other websites are no substitute for printed references or articles”, item 29; “I can see the connection between the Moodle course and the campus classes”, and item 32; “Online resources plus the classroom teaching enhances my learning”. These items were designed to explore the preference and experience of EIT students with regard to pure e-learning environments, blended environments or campus environment environments. Table 4.1 isolates these “blended delivery” items for inspection and displays the responses to these items overall.

The mean for item 8 is significantly lower than averages for most of the other items on the WEBLEI (see Table 4.0 and 4.1). This result may indicate that although most students are familiar with the online environment and are dependant on this mechanism they still would not choose pure online learning instead of campus classes if they were fully able to participate in campus activity. This lower average for item 8 indicates that generally students do not prefer online learning over real-world classroom learning environments. This may serve as a warning for tertiary administrators when considering replacing traditional courses with a pure e-learning environment. However, this interpretation for item 8 should be held alongside the data for all other items which suggests these same students express satisfaction with access to Moodle learning materials.

The mean for Item 20; Moodle is no substitute for on-campus classes, was 2.44 signifying a slight disagreement with this statement. This may imply that students did slightly agree with the concept that the online resources were an acceptable substitute for campus classes. However, this mean of 2.44 is very close to a neutral position and to some degree confirms the wider findings of the study where students have a fairly even

appreciation of both environments. It was an interesting finding to observe that there was no strong opposition to either mode of learning environment.

The mean of Item 26; Links to other websites are no substitute for printed references or articles, was also relatively low at 2.87. This average rating by students may imply that students did, in fact, view links to other useful websites as beneficial and valuable resources within the context of their other specific online lesson materials.

Items 29 and 32 showed relatively high means of 4.10 and 4.29 relating to students perceiving a useful connection between the classroom activities and the online resources. This may signal that students have experienced this alignment in their overall learning environment at EIT, and that they also find this alignment and mixture of online materials and classroom interaction beneficial.

5 Conclusion

This paper presented data to validate the use of the adapted WEBLEI survey instrument within largely campus-based courses supported by online systems at the Eastern Institute of Technology, Napier, New Zealand. The results and data from the WEBLEI were also presented showing differences by age, gender, year level and other factors.

The general mean results for each question were discussed and reasons were explored for the students’ experience of the online learning environment in conjunction with their on-campus course requirements.

Key specific questions and results from the WEBLEI exploring students’ experience and perception of the blending of online resources and campus-based classes were also examined and discussed.

The current learning management system (Moodle) and the current content appears to satisfy the majority of students based on the WEBLEI survey results, over a range of learning environment considerations. Therefore, the use of a LMS, such as Moodle, should be an essential requirement of any ideal blended environment. However, the extent to which the use of a system like Moodle should be deployed is still unclear from the quantitative results. Student results in this study tend to suggest that e-learning is viewed as supplementing rather than substituting classroom experiences, at least initially. To apply this student viewpoint may require a graduated scheme whereby, for example, the first year of a three year degree contains papers mainly campus-based with supplemental e-learning. In year two the blending could be expanded with some pure e-learning papers introduced, with other papers with less timetabled hours and more activity online. Finally, in the final year yet more emphasis could be placed on e-learning activity with perhaps the majority of papers purely online with a minority of papers on-campus supported by the LMS suiting the remaining practical ‘hands-on’ papers.

One of the highest student scores on the Likert scale (4.29) resulted from the statement that the combination of

online material and the classroom environment assisted learning. Students also indicated that they did not prefer online learning alone. So these two results indicate that students do not voluntarily wish to relinquish the campus classroom environment. Student results generally indicate that they hold a high value on traditional classes, real time interaction with their lecturer, and a sense of being part of a group of other students. Therefore, significant removal of compulsory campus activities may be viewed negatively by students.

Results from the student WEBLEI indicated that some students are relying on the online learning material when they choose not to attend classes

Evidence from the WEBLEI student data suggests that tertiary students engaged in all modes of delivery now have an expectation of some level of subject content support from online systems. It would be difficult to now envisage any full-time tertiary diploma or degree programme without an Internet-based LMS of some form supporting the course. This result supports the view that universities and tertiary institutes are now compelled to continue to provide online learning environments for their students, at least to some degree.

This study demonstrated how entrenched the use of the online learning environment is within the tertiary environment. The WEBLEI results show that tertiary students are familiar with most LMS features and would now have a low tolerance for a 'pure' classroom-only environment. The tertiary environment must evaluate and implement pertinent technologies continually to enhance and protect their students learning environment.

The value of academic programmes is evaluated by students as something more than delivery of content, absorption and then assessment. Students desire an experience and an immersion in some kind of learning environment during their process as a student. Assessment results are a narrow representation of the value of the experience as, say, a three-year IT degree student.

There may be advantages in pursuing a deliberate strategy for blended education delivery rather than having a single focus of adding e-learning scaffolding to every conceivable programme and course in a tertiary institute. A blended strategy may have a more inclusive effect on staff and students as all stakeholders can see the overall effect of new technologies and the impact within the context of the overall learning environment. Some caution may be needed using e-learning implementation as a totally separate learning environment re-constructing teaching and learning methodologies in an environment where current students do not appear dissatisfied.

Developing new blended learning environments may have implications for the physical resources on campus. Classrooms and lecture theatres may need to be re-designed to accommodate different sized groups, less frequently occurring groups of students, students requiring resources in a similar way to academic or other staff, opportunities for students to work alongside staff providing mentoring opportunities. One example of this kind of changed environment is a large classroom which

accommodates laboratory or computer workstation activities around the perimeter, discussion area tables, with the ability to accommodate informal lectures as well. This type of environment blends seamlessly with the online web-based environment and may even include campus-based navigation and exploration of web-based learning events.

In the same way, blended learning environments rate higher satisfaction than solely traditional class environments with students, as class discussions can occur in the physical classroom as well as within the online systems.

The blended concept of learning means thinking less about delivering instruction and more about producing learning, including more students through distance education technologies, and promoting a strong sense of community among learners. The idea behind blended learning is really a combination of these areas, and as the learning environment becomes more learning-centred, then the emphasis is placed on active learning through student group-work and social interaction alongside individual learning (Rovai & Jordan, 2004). This convergence of online and traditional instruction is possibly one of the main trends in tertiary education today, and runs in parallel with the convergence of the constructivist methodology and the traditional teacher-led pedagogy.

As Wheeler (2006) predicts, and as this study has indicated, tertiary institutions such as EIT may be constrained to adapt and change their learning environments simply as a reaction to external factors and trends beyond its control. The influence of the typical tertiary institute or university is diminishing because it may not be adapting quickly enough to the fast-moving demands of the information society. At the same time, new tertiary organisations are growing in influence because they can offer flexible, "any time, any place" learning opportunities in a global economy. Offering flexible learning, particularly distance education, workplace training, online Internet-enabled learning, and on-campus flexible open learning is increasing and becoming more popular. These fresh approaches are poised to gain momentum over the foreseeable future as they are best suited to meet the needs of both students and employers. This viewpoint by Wheeler (2006) supports the findings of this study in proposing a blended learning environment strategy that seeks to adopt technology where appropriate, but also recommending collaboration of staff, diversification, investment in technology, and staff skills development in new educational practices. However, it is still unclear what the risks are for older existing tertiary institutes with a historic physical infrastructure to fully and heavily engage and compete in the online environment.

Incremental improvements to the overall learning environment with aims towards an optimal blended learning environment in a particular tertiary institute may be more successful than a single focus on implementing e-learning at every opportunity and using e-learning as

leverage to reconstruct entire teaching methodologies and current practices.

Replacing traditional campus-based courses and programmes at tertiary institutes and universities with pure online e-learning learning environments may be attempting to solve a non-existent problem. The tertiary sector in New Zealand has already suffered recently from adverse publicity surrounding 'non-attending' and non-traditional courses.

The concept of life-long learning has permeated across a wide cross-section of society today and this has been dramatically enabled by the Internet (Seely-Brown, 2007). Future tertiary blended learning environments may revolve around building virtual communities of practice where students can participate alongside practitioners and teaching staff rather than simply as a member of a classroom. The future blended student may become immersed in a social environment which is supported by both a physical and online presence, mentored by a professional practitioner/teacher.

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