

PERSONALITY AND ONLINE LEARNING

Downing Kevin¹ and Baohua Yu²

City University of Hong Kong, China (¹sckevin@cityu.edu.hk; ²baohuayu@cityu.edu.hk)

ABSTRACT

This paper provides a comparative evaluation of two pilot online courses with their traditionally taught counterparts in a University of Hong Kong with the purpose of identifying particular characteristics of effective online learning. Students enrolled on two online courses were compared with their peers who were enrolled on the equivalent classroom based courses. Student satisfaction measures were taken from participants in both modes of delivery and compared with student learning style measured using the Honey and Mumford Learning Style Questionnaire. We find in this study that Extraversion/Introversion shows potential as a predictive measure of student satisfaction in online/blended learning modes of delivery, and Reflector learning style is correlated with high reported student satisfaction. This study suggests that the traditional classroom-based learning experience might not be as satisfying for Asian Reflectors as an online blended mode of delivery, and Western universities would be well-advised to consider this when planning programmes with an internationally diverse student population in mind.

KEYWORDS

Online learning and blended learning, Personality, Learning styles, Student satisfaction

INTRODUCTION

Increasingly, online learning is perceived as an effective method of instruction. Much recent educational research has focused on examining the purposes and situations for which online education is best suited. Typically, this research has concentrated on five main areas:

- What are the particular characteristics of effective online students and teachers?
- Is online learning and teaching as effective as traditional face-to-face teaching?
- What factors determine the most appropriate use of technology in an online teaching situation?
- How important is teacher-student and student-student interaction in the online learning process?
- What cost factors should be considered when planning or implementing distance education programs and how are those costs offset by benefits to the learner?

This paper is largely concerned with the first of these areas and provides a comparative evaluation of two pilot online courses with their traditionally taught counterparts. Students enrolled on two online courses were compared with their peers who were enrolled on the equivalent classroom based courses. Student satisfaction measures were taken from participants in both modes of delivery and compared with student learning style measured using the Honey and Mumford Learning Style Questionnaire (2000).

LEARNING STYLE AND ONLINE LEARNING

Terrell & Dringus (2000) investigated the effect of learning style on student success in an online learning environment and concluded that institutions offering online education programs should give consideration to the different learning styles of their students because these could impact significantly on academic achievement. The effect of learning style on student success in online learning has been extensively researched and so will not form the focus of this study (Dille & Mezack, 1991; Souder, 1994; Ridley & Sammour, 1996; Diaz, 2000a). In this study, the relationship between learning style and student satisfaction in the two online applied psychology courses will be investigated because research into the link between learning styles and student satisfaction, in Asia in particular, remains rare.

Diaz & Carnal (1999) demonstrated that local health education students enrolled in an online class are likely to have different learning styles than equivalent on-campus students. They concluded that online students were more independent and on-campus students were more dependent. In this study, the learning styles of the online students and traditional students will be further investigated and correlated with their reported satisfaction with the learning experience.

In acknowledging their debt to Kolb's (1984) work on learning and the identification of learning styles, Honey & Mumford (1986) identify a different four stage process from Kolb's Converger, Diverger, Assimilator and Accommodator. They identify four styles which they call Activists, Reflectors, Theorists and Pragmatists. The characteristics of each style, as described by Honey and Mumford (1986), are attached in the Appendix. These learning style preferences appear particularly appropriate for a comparative study of this type because they are based on the idea that students pick up habits in relation to learning which they regularly utilize. According to the theory, the authors would expect the characteristics of Reflectors and Theorists to be most suited to online learning, and therefore to produce the highest satisfaction levels. Activists and Pragmatists might be expected to produce the highest satisfaction levels in the traditional mode of learning. Therefore, these are the correlations being primarily tested in this research.

SOME OTHER KEY FACTORS

A summary of key research studies in this area yields some conflicting findings relevant to the current research. Egan *et al.* (1991) concluded that conventional instruction is generally perceived to be better organized and more clearly presented than online education. However, Martin and Rainey (1993) found no significant difference in positive attitudes towards course material between online and traditional education. In addition, research by Souder (1994) indicates that achievement on various tests administered by course instructors tends to be higher for 'distant' as opposed to 'traditional' students.

Perhaps one key factor inherent in all of these seemingly contradictory findings is the design of the instructional material, irrespective of whether it is delivered online or through more traditional means. Many teachers and researchers (E.g. Wood, 1997; Littlejohn *et al.* 1999) point out that the organization and reflection necessary to effectively teach online often improves an instructor's traditional teaching. This is a theme continued by Downing (2001) who identifies the eventual success or failure of online teaching as largely due to the same factors that have always been central to the provision of a quality learning experience. These factors include the energy,

commitment and imagination of those responsible for providing the teaching and learning environment, whether it is virtual or actual.

However, another key factor has also been reported and that is the demographic differences between online and traditional students. Online students are generally older, have completed more college credit hours and more degree programmes, and tend to have a higher all-college prior GPA (grade point average) than their traditional counterparts (Gibson & Graff, 1992; Thompson, 1998).

The study reported here avoids some of the potentially confusing effects of these two factors because the same author designed both the traditional courses and their online counterparts, and the sample of students was allocated to either mode on the basis of quota. In other words, because of local college based administrative reasons, students were more or less randomly allocated to either the online or traditional mode. This provided an ideal opportunity to reduce the potential effects of the two key factors identified above.

METHOD

A comparative evaluation of two pilot online applied psychology courses with their traditionally taught counterparts was undertaken at City University of Hong Kong during early 2003. Students enrolled on two online courses were compared with their peers who were enrolled on the equivalent classroom based (traditional) courses. Student satisfaction measures were taken from participants in both modes of delivery and correlated with student learning style measured using the Honey and Mumford Learning Style Questionnaire (2000). The two courses, 'Psychology for Everyday Life' and 'Behaviour in Organisations' were developed by the same author for associate degree students from Hong Kong in both traditional and online mode.

Rationale for Classification into Traditional/Online

According to Gandell *et al.* (2000), the extent of Web use can be described in terms of the impact it has on learning relevance to the course. They categorized the extent of use according to the relevance and importance of learning goals appropriately addressed. Consequently, they identify five categories that represent a continuum of extent of use:

- **Minimal:** Use of the Web that is neither relevant nor necessary to achieve any explicitly stated course learning goals and therefore has no impact on course-related learning.
- **Supplemental:** Use of the Web that is relevant but not necessary to achieve a few explicitly stated course goals and therefore does not have much impact on related student learning.
- **Integral:** Use of the Web that is relevant and contributes to achieving some of the learning goals in the course, and would have a fair impact on student learning.
- **Central:** Use of the Web that is relevant and necessary to achieve most learning goals in the course, and would have a substantial impact on student learning.
- **Exclusive:** Use of the Web that is relevant and necessary to achieve all learning goals in the course, and would have a major impact on student learning.

Gandell *et al.*'s (2000) classification system has been adopted for the comparisons made in this research. The two online Applied Psychology courses in this research are categorised in the Central/Exclusive mode, but also make use of what has become known as 'blended' learning. According to Valiathan (2002), blended learning is used to describe learning that mixes various event-based activities, including face-to-face classrooms, online learning, and self-paced learning. The main tool for accessing the two online courses is the learning management system, Web CT.

Traditional (Classroom Based) Mode of Delivery

Students enrolled for this mode of delivery experience two hours of face-to-face lecture/tutorial each week for thirteen weeks. All learning material is presented using these lectures, tutorial and problem based learning activities. There is a ratio of one teacher to around thirty students per class and the course is largely teacher-centred. The instructors mainly use overhead projectors, PowerPoint or hard copies of notes to deliver the teaching and arrange tutorial small group exercises. The extent of Web use is largely minimal (Gandell *et al.*, 2000) to allow students the option of downloading copies of lecture notes and tutorials.

Online Mode of Delivery

The extent of Web use for the online mode of delivery is in the exclusive category in which the use of the Web is both relevant and necessary, and would have a major impact on student learning. However, the online courses in this study are blended learning, which combines the three major formats of learning. Blended learning seeks the optimum blend of self-study, teacher-led events and group collaboration, each deployed in a blend of asynchronous or synchronous modes, appropriate for the learning outcomes. The main tool for accessing these courses is the online learning management system Web CT, and each three credit course is constructed of ten units of learning material with students being recommended to spend ten hours to study each unit. Teaching and learning materials are presented in a variety of formats and include video clips, audio clips, images, animations, URL links to websites, Power point presentations, and formative and summative quizzes. A total of 7 hours and 40 minutes of face-to-face contact is provided via five tutorials which take place in weeks one, three, six, nine and twelve of a thirteen week semester. Each of the first four tutorials are 1 hour and 20 minutes in duration with the last tutorial lasting two hours and 20 minutes to allow for students summative small-group presentations. A bulletin board is provided on the Web CT platform for each online version of the course to allow students to engage in discussion and collaboration with fellow students and teachers. The objective here was to foster the formation of a virtual learning community for the online courses and this objective was achieved.

The extent of Web use is exclusive (Gandell *et al.*, 2000) because the online materials (units) are both relevant and necessary to achieve the learning and assessment outcomes.

Participants and Procedures

Participants

All participants were first year City University of Hong Kong Associate Degree students. Students enrolled in the two traditional and the two equivalent online applied psychology courses which were run during Semester B 2003 (January to April 2003) were asked to voluntarily participate in this study. A total of 160 students were selected at random from the volunteers (N=160). 80 of these were taken from the two traditional courses and 80 from the two online courses. All participants were of similar academic background because of their successful application to study at associate degree level at City University of Hong Kong. Participants were matched for education, age, gender, and life experience across the two conditions, traditional and online. Therefore, this is a related (matched) pairs design, and the data was analysed using a Wilcoxon Matched Pairs Signed Ranks test. The data presented in this paper is related only to the matched pairs (n=32 pairs) who were assessed as 'Reflectors' after completing the Honey and Mumford (2000) questionnaire because this group produced the most significant and interesting results.

Procedure

The Honey & Mumford Learning Styles Questionnaire (2000) was administered to all students in the third week of the semester in order that it was administered face-to-face at the same stage for all groups. The classes were allocated an additional hour to complete the questionnaires, and assistance was available to clarify words and sentences, which caused difficulty in interpretation.

A Teaching Feedback Questionnaire (TFQ) designed, and in regular use at City University of Hong Kong, was administered to the students during week twelve in order to ascertain the level of student satisfaction for each of the four courses and each of the two conditions.

Follow up interviews were conducted with 12 matched pairs who volunteered to give their time for this purpose. Questions were asked about what aspects of the online and traditional modes of delivery most suited their style of study, and which aspects they found most problematic.

Instruments

LSQ: The Honey and Mumford (2000) Learning Style Questionnaire (LSQ) was used to ascertain student learning styles. The questionnaire contains eighty questions designed to differentiate between four main learning 'styles'. Participants are asked to tick or cross to indicate whether on balance they agree or disagree with a statement. This instrument was chosen because it has been standardised, is in wide use in academic institutions around the world, and substantial norm data is in existence to allow some triangulation. The vast majority of items are behavioural in the sense that they describe an action that someone might or might not be seen to take, although occasionally an item probes an area of preference or belief rather than a manifest behaviour. In common with most questionnaires of this type, the LSQ is designed to elicit *general* trends or tendencies running through a person's behaviour, and does place undue significance on any one item.

The eighty questions are distributed equally over the four learning styles: Activists, Reflectors, Theorists and Pragmatists. These trait descriptions are detailed in the Appendix. There are no right or wrong answers. Respondents put a tick if they agree more than disagree and put a cross if they disagree more than agree.

TFQ: The Teaching Feedback Questionnaire (TFQ) is a fairly standard course feedback questionnaire. It is submitted anonymously and online for most courses taught within City University of Hong Kong. This questionnaire was designed by City University of Hong Kong for identifying levels of student satisfaction with particular courses. It is usually administered towards the end of each semester to all students within a group or cohort. Most of the questions provide simple ordinal data on a 7-point Likert scale of strongly agree, agree, neutral, disagree, strongly disagree. The data produced is ordinal.

RESULTS

Following administration of the Honey and Mumford Learning Styles Questionnaire, 32 matched pairs were identified as primarily reflectors in their learning style and their Teaching Feedback Questionnaire data was analysed using the Wilcoxon Matched Pairs Signed Ranks Test. The results for this group were highly significant and are reported in the table below:

Table 1. Matched pairs TFQ distribution of scores for reflectors (N=32 matched pairs).

Mode of Delivery	TFQ Score						
	7 = Excellent	6 = Very Good	5 = Good	4 = Average	3 = Below Average	2 = Poor	1 = Very Poor
Traditional	2	8	15	7	0	0	0
Online (Blended)	15	17	0	0	0	0	0

Wilcoxon Signed Ranks Test

Table 2. Ranks.

		N	Mean Rank	Sum of Ranks
Condition B (traditional) Condition A (online)	Negative Ranks	25 ^a	13.76	344.00
	Positive Ranks	1 ^b	7.00	7.00
	Ties	6 ^c		
	Total	32		

^a Condition B (traditional) < Condition A (online)

^b Condition B (traditional) > Condition A (online)

^c Condition A (online) = Condition B (traditional)

Table 3. Test Statistics^b.

	Condition B (traditional) - Condition A (online)
Z	-4.363 ^a
Asymp. Sig. (2-tailed)	.000

^a Based on positive ranks.

^b Wilcoxon Signed Ranks Test

The results from the other learning style groups (Activists, Theorists, Pragmatists, and combinations) are not reported here because their data yielded no significant relationships between learning style and student satisfaction. However, the results for the students with a clear preferred style of Reflector are presented and discussed because the Reflectors in this study showed a highly significant preference (as measured by satisfaction levels) for the model of online (blended) learning presented.

DISCUSSION

Salmon (2001) refers to Activists and Pragmatists as 'online Extraverts'. An Extravert is an outgoing, gregarious, sensation seeking personality type who seeks stimulation to raise levels of cortical arousal to an optimum for efficient functioning (Eysenck, 1959, 1963, 1991). In other words, they are often seen as sociable and open when compared with their Introvert colleagues.

Activists and Pragmatists

Honey and Mumford (1982, 1986, 2000) describe Activists as liking a wide range of different activities, and immersing themselves fully and without bias in new activities. They are gregarious people, constantly involving themselves with others but in doing so, they hog the limelight. They are the life and soul of the party and seek to centre all activities around themselves. This description appears to describe the archetypal Extravert and it is clear that involving Activists in learning activities (both traditional and online) should not be too difficult. Honey and Mumford describe Pragmatists as keen on trying out new ideas to see if they work in practice. They like to experiment with the applications of these ideas. They like to get on with things and act quickly and confidently, responding to problems and opportunities as a 'challenge'. They are essentially practical down to earth people who like making practical decisions and solving problems. Whilst this description is less like an extreme Extravert, nonetheless it does contain factors which would suggest that these individuals would also find traditional and online activities equally stimulating.

Theorists and Reflectors

Salmon (2001) also describes Theorists and Reflectors, the other two learning styles identified by Honey and Mumford, as 'online Introverts'. An Introvert is at the other end of the continuum from the Extravert. Eysenck (1991) describes Introverts as experiencing high levels of cortical arousal, and consequently they avoid additional external stimulation to reduce their levels of cortical arousal to optimum levels. They prefer quiet reading and appear to avoid social settings or situations where they might find themselves in large groups. In other words, these are often the individuals that sit quietly in traditional classroom settings and find it difficult to interact when compared with their Extravert colleagues.

Honey and Mumford (1982) describe Theorists as thinking problems through in a vertical, step by step logical way. They like to analyse and synthesise, and tend to be detached, analytical and dedicated to rational objectivity rather than anything subjective and ambiguous. This is their 'mental set' and they rigidly reject anything that doesn't fit with it. They tend to be perfectionists who won't rest easy until things are tidy and fit into their rational scheme. They need time to explore links between ideas and structure their thinking. These individuals often feel frustrated and find it difficult to speak up in the traditional classroom. Some studies (Terrell & Dringus, 2000; Souder, 1994) have suggested that online learning is a more effective

means of teaching those with this learning style although the present research identified no significant differences in teaching feedback scores in both traditional and online delivery modes for Theorists.

Reflectors like to stand back and ponder experiences and observe them from many different perspectives. They collect data and think deeply about it before coming to any conclusions. This thorough collection and analysis of data about experiences and events is what counts for them so they tend to postpone coming to conclusions for as long as possible. This means that they do not contribute greatly to traditional classroom discussion because they are still collecting data and ruminating over its value. Their philosophy tends to be cautious, so they prefer to think deeply about concepts and activities before giving considered responses. Consequently, they often feel left out in traditional classroom settings.

Reflectors among Asian Students

In addition, Barron (2002) points out that the Reflector learning style is much more prevalent among Asian students studying degree courses in Australia than amongst Western students, and that whilst this might not significantly affect completion of the educational programme, it does influence student satisfaction levels. This is borne out by the highly significant results obtained in the current paper, whereby the participants were all Asian students and a large proportion of them, 32 matched pairs (64 students from a total of 160 = 40%) were identified as strong Reflectors after completing the Honey and Mumford Learning Styles Questionnaire. These matched pairs of reflectors demonstrated a marked preference for the online (blended) mode of delivery (see Table 1 above), and some of the potential reasons for this were highlighted during a follow-up interview conducted by a colleague of the researcher (co-author) who is not a teacher.

Follow up interviews with 24 volunteers (12 matched pairs) from the two conditions revealed that invariably reflectors found that they had not had time to process the information in the traditional mode of delivery before they were expected to enter into classroom discussion, and that often other student colleagues had already commented on what they would have liked to have said. More than half of these students reported that this left them feeling unable to contribute fully in the learning experience, although they reported still enjoying the course. Conversely, 10 of the 12 Reflectors in the online mode said that the use of the Bulletin Board function in Web CT had allowed them to participate in discussions about both online and tutorial material over a period of weeks. And all 12 reported that having tutorial material available in the Download Centre one week in advance of the tutorial had allowed them to think about what was coming, and make more of a contribution either online via the Bulletin Board or in the face-to-face tutorials.

CONCLUSION: REFLECTORS AS EXTRAVERTS IN THE ONLINE MODE OF DELIVERY

Results from this study contradict the findings of Salmon (2001) reported above. Far from Reflectors being 'online Introverts', it would appear that the time given for reflection, and the opportunity to engage in discussion with the teacher and fellow students via the online Bulletin Board, allows those students with this learning style to behave in a more Extravert and active way. This is in stark contrast to feelings of being unable to contribute fully, or having been 'beaten to the comment' reported by Reflectors in the traditional mode of delivery. Therefore, the authors of this paper argue that Reflectors at least are 'online Extraverts', and that the use of online (blended) learning significantly improves student satisfaction levels for Reflectors.

Given the reported prevalence of this style of learning amongst Asian students, this is clearly an important factor to be considered by those responsible for the design and delivery of programmes to Asian students, particularly in 'Western' universities. International student recruitment, particularly from Asia is changing the student profile in these universities (Dobson *et al.*, 1998) and the pressure is on to manage this student diversity and provide appropriate support for international students. The impact of what is sometimes called Confucian heritage culture (Lee, 1999) is often underestimated because Asian students are generally viewed by Western educators as diligent note-takers, well-disciplined, hard-working, quiet, respectful, and good attendees (Barron, 2002; Adam *et al.*, 1999; Volet & Renshaw, 1999; Bradley & Bradley, 1984). Whilst these students might be successful in completing the programmes they are following, this study suggests that the traditional classroom-based learning experience might not be as satisfying for Asian Reflectors as an online blended mode of delivery, and Western universities would be well-advised to consider this when planning programmes with an internationally diverse student population in mind.

REFERENCES

- Adam, M., Maxwell, G.A., Pooran, J. & Scott, B. (1999). *South East Asian students learning styles*. Paper presented at the CHME Hospitality Research Conference, Surrey, 9-21.
- Barron, P.E. (2002). Providing a more successful education experience for Asian Hospitality Management students studying in Australia: A focus on teaching and learning styles. *Journal of Teaching in Travel and Tourism*, 2(2), 63-88.
- Bradley, D. & Bradley, M. (1984). *Problems of Asian students in Australia: Language, culture and education*. Canberra: Department of Education and Youth Affairs.
- Diaz, D.P. & Cartnal, R.B. (1999). Students' learning styles in two classes: Online distance learning and equivalent on-campus. *College Teaching*, 47(4), 130-135.
- Diaz, D.P. (2000a). *Comparison of student characteristics, and evaluation of student success, in an online health education course*. Unpublished doctoral dissertation, Nova Southeastern University, Fort Lauderdale, Florida.
- Dille, B. & Mezack, M. (1991). Identifying predictors of high risk among community college telecourse students. *The American Journal of Distance Education*, 5(1), 24-25.

Dobson, I.R., Sharma, R. & Calderon, A.J. (1998). *The comparative performance of overseas and Australian undergraduates*. Paper presented at the 12th Australian International Education Conference, Canberra, 3-18.

Downing, K. (2001). Information technology, education and health care: Constructivism in the 21st century. *Educational Studies*, 27(3), 229-235.

Egan, M.W., Sebastian, J. & Welch, M. (1991). *Effective television teaching: Perceptions of those who count most...distance learners*. Proceedings of the Rural Education Symposium, Nashville, TN. (ED 342 579).

Eysenck, H.J. (1959). *Manual of the Maudsley personality inventory*. London: University of London Press.

Eysenck, H.J. (1963). On the dual nature of extraversion. *British Journal of Social Clinical Psychology*, 2(46).

Eysenck, H.J. & Eysenck, S.B.G. (1991). *Manual of the Eysenck personality scales (EPS Adult)*. London: Hodder and Stoughton.

Gibson, C.C. & Graff, A.O. (1992). Impact of adult's preferred learning styles and perception of barriers on completions of external baccalaureate degree programs. *Journal of Distance Education*, VII(1), 39-51.

Honey, P. & Mumford, A. (1986). *The manual of learning styles*. Maidenhead: Peter Honey Publications

Honey, P. & Mumford, A. (2000). *The learning styles questionnaire*. Maidenhead: Peter Honey Publications.

Honey, P. & Mumford, A. (1982). *The manual of learning styles*. UK: McGraw Hill.

Kolb, D. (1984). *Experiential learning: Experience as the source of development*. Englewood Cliffs: Prentice-Hall.

Lee, W.O. (1999). The cultural context for Chinese learners: Conceptions of learning in the Confucian tradition. In D.A Watkins & J.B. Biggs (Eds.), *The Chinese learner: Cultural, psychological and contextual influences*. Hong Kong: Centre for Comparative Research in Education/Camberwell, Victoria: Australian Council for Educational Research, 22-42.

Littlejohn, A.H. & Stefani, L.J. (1999). Effective use of communication and information technology: bridging the skills gap. *Alt-J*, 7(2), 66-76.

Littlejohn, A.H., Stefani, L.J. & Sclater, N. (1999). Promoting effective use of technology, the pedagogy and the practicalities: A case study. *Active Learning*, No.11, 27-30, Oxford CTISS.

Ridley, D.R. & Sammour, H.Y. (1996). Viable alternative means of instructional delivery: Online courses as an alternative teaching method. *College Student Journal*, 30, 337-339.

Salmon, G. (2001). *Psychological and group learning perspectives*. Paper presented at the E-Learning Conference, London, February 2001.

Souder, W.E. (1994). The effectiveness of traditional vs. satellite delivery in three management of technology master's degree programs. *The American Journal of Distance Education*, 7(1), 37-53.

Terrell, S.R. & Dringus, L. (2000). An investigation of the effect of learning style on student success in an online learning environment. *Journal of Educational Technology Systems*, 28(3), 231-238.

Thompson, M.M. (1998). Distance learners in higher education. In C. Gibson (Ed.), *Distance learners in higher education: Institutional responses for quality outcomes*. Madison, WI: Atwood, pp. 9-24.

Volet, S.E. & Renshaw, P. (1999). Chinese students at an Australian University: Adaptability and continuity. In D.A. Watkins & J.B. Biggs (Eds.), *The Chinese learner: Cultural, psychological and contextual influences*. Hong Kong: Centre for Comparative Research in Education/Camberwell, Victoria: Australian Council for Educational Research, 205-220.