



Institutional-level integration of the learning and study strategies inventory (LASSI)

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Abstract

Purpose – The purpose of this paper is to exhibit the integration of learning and study strategies inventory (LASSI) with the City University of Hong Kong information systems to promote teaching and learning within the university.

Design/methodology/approach – From the 2006 entry cohort, all undergraduate freshmen at City University of Hong Kong are required to complete LASSI online through Administrative Information Management System (AIMS). Each student is required to take LASSI at three specific times during their undergraduate careers. With the cooperation of H&H publishing, City University has developed a program within AIMS to upload LASSI results of individual students so that the students can view their scores whenever they wish to. In addition to helping the students develop their learning and study strategies, the integration between LASSI and the university's information system provides academic staff with aggregated LASSI scores for their students.

Findings – The integration of LASSI with the university's information systems is found to be useful as students have the possibility of reviewing their progress in terms of learning and study strategies while teachers can design appropriate teaching and learning activities according to the relative strengths and weaknesses in learning of their own classes to assist students. In addition, the input of LASSI data to the City University AIMS helps administrative personnel correlate LASSI results with the other detailed information available in the AIMS.

Originality/value – This paper provides other institutions with insights into the integration of LASSI with the university's information systems to enhance the teaching and learning environment within the university. It aims to inform decision makers of issues in centralizing and accessing students' data to improve teaching and learning.

Keywords Information systems, Students, Universities, Hong Kong

Paper type Case study

1. The LASSI

The learning and study strategies inventory (LASSI) was first developed by Weinstein *et al.* (1987) after nine years of development at the University of Texas at Austin. The original version in 1987 had 77 items, and a second edition, with 80 items was released in 2002 (Weinstein and Palmer, 2002) and is offered through H&H Publishing Company, Inc. It is a survey widely used in many tertiary institutions in the USA and around the globe. It is a ten-scale, 80-item assessment of students' awareness about and use of learning and study strategies related to self-regulation, skill and will components of strategic learning. Research has repeatedly demonstrated that these factors positively correlate significantly to success in college and that they can be learned or enhanced through educational interventions such as learning and study skills courses (King,



1991; Weinstein, 1994a, b; Hanley, 1995). LASSI scores have also been shown to be positively correlated with grade point average, and the instrument is proposed to be an effective tool in academic support and in predicting academic performance (du Plessis, 1996; Yip and Chung, 2002, 2005).

LASSI provides standardized scores (percentile score equivalents) and national norms (USA) for ten different scales (there is no total score since this is a diagnostic measure). LASSI is both diagnostic and prescriptive. It provides students with a diagnosis of their strengths and weaknesses, compared to other students, in the areas covered by the ten scales and it is prescriptive in that it provides feedback about areas where students may be weak and need to improve their knowledge, attitudes, beliefs and skills. LASSI measures three main areas of what is termed “*strategic learning*”.

1.1 The self-regulation component of strategic learning

These scales measure how students manage, self-regulate and control the whole learning process through using their time effectively, focusing their attention and maintaining their concentration over time. This checks to see if they have met the learning demands for a class, assignment or a test. It also checks if they are using study supports such as review sessions, tutors or special features of a textbook. The LASSI scales related to the self-regulation component of strategic learning are concentration (CON), time management (TMT), self-testing (SFT) and study aids (STA).

1.2 The skill component of strategic learning

These scales examine students’ learning strategies, skills and thought processes related to identifying, acquiring and constructing meaning for important new information, ideas and procedures. The LASSI scales related to the skill component of strategic learning are information processing (INP), selecting main ideas (SMI) and test strategies (TST).

1.3 The will component of strategic learning

These scales measure students’ receptivity to learning new information, their attitudes and interest in college, their diligence, self-discipline, academic aggressiveness and willingness to exert the effort necessary to successfully complete academic requirements. The LASSI scales related to the will component of strategic learning are anxiety (ANX), attitude (ATT) and motivation (MOT).

2. LASSI at City University of Hong Kong

At City University of Hong Kong, LASSI has been used by various units on an *ad hoc* basis to selected groups of students since 1996. Initially, LASSI proved to be a useful tool for individual students and teachers in terms of analyzing and improving particular skills and strategies. Over time, we have found it valuable to integrate LASSI results with other information. Semester A 2005-2006 was the first time that LASSI was offered to all undergraduate freshmen. It was not a compulsory exercise; so out of some 4,000 new students, about 1,800 took the test. Students reported positive benefits from taking LASSI. Debriefing sessions were offered to help students understand their scores and suggest how they could get help; debriefing sessions for first-year teachers of the colleges/schools were also conducted as these colleagues have direct contact with the students. Used appropriately, LASSI can assist staff and students identify areas of relative weakness in study strategy.

The Hong Kong Universities General Council (UGC) has issued a mandate on the adoption of outcome-based teaching and learning (OBTL). That mandate requires a

four-year curriculum and places responsibility for providing evidence for effective student learning squarely upon the university. Therefore, it was decided to use the LASSI as one institution-wide measure of the effectiveness of the learning environment, and of the “value-addedness” that City University provides to students. With the experience of a pilot phase in September 2005, from the 2006 entry cohort, all undergraduate freshmen at City University are required to complete LASSI online through Administrative Information Management System (AIMS). City University has also introduced the traffic light self-allocation system in 2006 which allows students to use their own LASSI scores to diagnose their strengths and weaknesses and specifically target those courses which will best suit their own personal profile. “Red” learning zone represents the self-regulation component of strategic learning, which students should “stop” and “think” about the way they study. “Amber” learning zone represents the skill component of strategic learning, which means “caution” and students need to make sure they have skills to maximize their potential as a learner at university. “Green” is for “go” and represents will component of strategic learning. If students have the right attitude to study, and they are confident and motivated, more can be achieved as a learner at university.

3. Integrating LASSI with City University information systems

Handling the LASSI, demographic and other institutional data each year for approximately 4,500 new undergraduate students who would take the test three times during their undergraduate careers (entry, interim and exit tests) clearly required a more integrated approach with our institution-wide information systems. The LASSI data system provided by H&H publishing worked well for program-level or even departmental purposes, but it was not sufficient for managing the large data sets generated and used at an institutional level. Therefore, City University worked with H&H to develop a system which clearly identified each student who completed the LASSI and allowed the data to be stored centrally at City University for further analysis.

The integration of administrative systems to achieve better efficiency and effectiveness is one of the main objectives of City University’s information technology strategy. The student information system (SIS) used at City University is SunGard SCT Banner, which was purchased in mid-1997, and is an Oracle™ enterprise database used by the university to store all student, staff and alumni data. In February 1998, Admissions went live as the first module of the SIS. In the ensuing years, implementation and development continued on the student system and by 2000, City University had a fully integrated SIS, from admissions to graduation, with a suite of web-based functions to deliver services directly to end users. Once the student system was established and functioning well, human resources went live in 2001, followed by an alumni system in 2002. Given this context, it was decided that AIMS (our internal name for the Banner system) would be used for student identification for LASSI completion. Therefore, in common with all other student related data (e.g. grade point average (GPA), courses registered, mode of study, parents’ education background, type of housing), the resulting LASSI data of individual students would be stored inside AIMS so that more detailed analyses and correlation with other data are facilitated.

With students required to take the LASSI on three separate occasions as their undergraduate study progresses, it is crucial that only designated students are allowed to complete the questionnaire at specific time frames; in other words, freshmen on entry, Year 2 students in Semester 3 and graduating students in their final semester. Consequently, the Enterprise Solutions Unit (ESU), which is in charge of administrative

computing at City University, developed a program in AIMS which checks students' IDs for their privilege to take the LASSI. Administrators can set the program parameters according to students' admission cohort, level of study, test dates, etc. This program was then released to the university student e-portal (Blackboard Suite community), the most familiar interface for students, to make it possible for only designated students to complete the survey. As soon as a designated student is identified, the program automatically connects him/her to the LASSI system and provides LASSI with our invoice number, school number, student ID, student name and e-mail in order to allow each student to complete the questionnaire. Once the student starts completing the questionnaire, he/she is in the LASSI environment and the normal functions and features of LASSI are available. On completion, the student can print out a copy of the results for personal records, and the raw data are stored in the LASSI system. City University personnel can then do a batched download of our students' LASSI data on a routine bases via tailor-made program provided by H&H Publishing. This data download includes full responses to the 80 questions and the consolidated percentiles of the ten LASSI items with a date stamp to mark when the test was taken.

These batches of data are then uploaded into our Banner system according to the student IDs so that individual LASSI data pertaining to each student is stored together with the individual's other academic and demographic data. This final step allows us to track the number of times each student has completed the LASSI survey. The system rejects any duplicate record within 30 days, which prevents *ad hoc* completions which might confound our results. With the LASSI data properly stored in AIMS, we can now use the standard web functions to make the results available to individual students as part of their academic and learning profile. Our students are used to getting their academic and other related information via the university e-portal which provides single sign-on facilities to AIMS. By making the LASSI results a composite part of their records on AIMS, student retrieval is easily facilitated within their familiar learning environment.

4. Services and workshops

As mentioned earlier, in addition to providing easy access for students to their own results, aggregated results from the entire class in any course are provided to teachers in order to allow them to assess the relative strengths and weaknesses in learning and study strategies for their classes and devise appropriate teaching and learning activities which address the specific identified learning needs. The system used to disseminate this information is our e-learning platform, "Blackboard Academic Suite" and every credit-bearing course at City University now has a Blackboard component which contains class based LASSI information. Using the single sign-on function between Blackboard and AIMS, the ESU has provided a further program which ensures that the aggregated LASSI results from each course can be accessed by the corresponding teachers via the standard class list function. All academic staffs are familiar with the university e-portal which provides access to their Blackboard courses and by successfully integrating the LASSI scores into our standard information systems, we have ensured that both students and teachers are better informed and can readily use these data to improve our learning environment. Finally, this combination of systems has allowed those responsible for institutional research to ensure that data from a variety of sources are integrated for more efficient analysis and publication.

Empirical evidence has shown that resources and academic support provided in the freshmen year can be critical in helping students to transform into motivated and proactive learning, enabling them to benefit more from tertiary education in their ensuing years as well as remaining active as life-long learners (Letteri, 1992; Weinstein, 1994a, b; Hanley, 1995). Thus it is pertinent that students understand what the LASSI data mean and how and where they can get help to improve themselves.

In addition to the individual learning strategy profiles readily accessible by students via AIMS, online information about ways and resources for improvement was also made available to them. Based on the LASSI scales, specific workshops were offered to students throughout the academic years, since 2006, to develop appropriate attitudes and relevant skills. With student leaders' explanations, students who score below the 50th percentile on specific scale(s) were suggested to register our specially designed workshops via AIMS. A system of student card auto-detection (Mifare Smart Card) was used to identify students and a program (Attendance Taking System V.1) was used to take attendance automatically. Records were later uploaded to the Banner system for data storage. These data can be used to compare the improvements of students' LASSI scores before and after remedial interventions.

5. Research

With the ease of data retrieval from the Banner system, students' LASSI results were used to correlate with demographic (type of housing, gender, level of study, etc.; Downing *et al.*, 2007a, 2008) and other institutional data (e.g. A-level results, GPA, workshops attended; Downing *et al.*, 2007b, 2008). Preliminary analysis of the LASSI data from Semester A, 2005 cohort has highlighted some interesting areas for further investigation and development. For example, students who had moved away from home to Halls of Residence to study demonstrated significantly higher LASSI scores (particularly on self-regulation; Downing *et al.*, 2007a) than their counterparts remaining in the family home, suggesting that the life experience gained by simply living away from home might assist students to develop skills valuable for life-long learning. We also found the importance of the LASSI survey to help students to develop metacognition (Downing and Shin, 2006). In addition, students from courses using problem-based learning are better than their counterparts who are from courses of non-problem-based teaching (Downing *et al.*, 2009).

6. Conclusion

As data accumulate, City University will gather a full picture of students' learning and study strategies over their period of study as undergraduates. The data analyses will also help to evaluate the success of the different educational interventions specifically designed for our students. Using these components of strategic learning will help us identify the strengths and weaknesses of individual courses and programs in terms of the value they are adding to the student learning experience. Not only will this allow university staff to focus on particular identified problems, but it will also allow students to help improve themselves. Students can use the traffic light self-allocation system to further target courses which suit their own personal profile according to their LASSI results. Ensuring that students take the test at least three times throughout their undergraduate study at City University within specific time frames will also allow timely assessment of progress and achievements. Students who have made significant progress or show a sharp decline in academic scores can compare this with their LASSI results to further find ways to improve. Workshops have also been set

up for students who wish to perform better but cannot find any other way to do so. The integration of LASSI to the City University Banner system has allowed those responsible for institutional research to ensure more efficient analysis. Consequently, university staff can take a renewed interest in both the practical and academic uses of the LASSI, some of which is evidenced in the publication list which has resulted from this initiative, and City University has taken another important step to ensure that improvements in our learning and teaching environment are demonstrably student-centered and data driven.

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