

# User's Manual

## LLO, Learning and Study Strategies Inventory for Learning Online

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# **User's Manual**

## **LLO, LEARNING AND STUDY STRATEGIES INVENTORY FOR LEARNING ONLINE**

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## **PART 1: WHAT IS NEW ABOUT LLO, LASSI FOR LEARNING ONLINE?**

COVID-19 will alter the future of teaching and learning. We're here to help!

LASSI has been improving students' study strategies for more than 30 years. LASSI has a new edition specifically designed to meet the challenges of online instruction.

LASSI for Learning Online Provides a Tool For:

- Teaching each student the study strategies needed in new academic circumstances;
  - Frequent opportunities for student/staff communications that are tailor-made for all;
  - Administrative data that can be widely shared throughout the institution to all those that can use it;
  - Personalized feedback and information provided to each student;
  - Maintaining frequent, personal contact between individual students and counselors/instructors;
  - Improving the study strategies of students grappling with new situations.
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## PART 2: OVERVIEW OF THE LLO

### What is the LLO and What Does it Measure?

The LLO is a 10-scale, 60-item assessment of students' awareness about and use of learning and study strategies related to **skill, will** and **self-regulation** components of strategic learning. The focus is on covert and overt thoughts, behaviors, attitudes, motivations and beliefs that relate to successful learning in postsecondary educational and training settings. Furthermore, these thoughts, behaviors, attitudes, motivations and beliefs can be altered through educational interventions. Research has repeatedly demonstrated that these factors contribute significantly to success in college and that they can be learned or enhanced through educational interventions such as learning strategies and self-regulated study courses and programs.

The LLO is both **diagnostic** and **prescriptive**. The LLO provides standardized scores (percentile score equivalents) and national norms for ten different scales (there is no total score reported because this is a diagnostic instrument). It provides students with a diagnosis of their strengths and weaknesses, compared to other college students, in the areas covered by the ten scales; it is prescriptive in that it provides feedback about areas where students may be weak and need to improve their knowledge, skills, attitudes, motivations and beliefs.

### How Can the LLO Be Used?

The LLO is designed to be used as:

- (1) A screening measure to help students develop greater awareness of their learning and studying strengths and weaknesses.
  - (2) A diagnostic measure to help identify areas in which students could benefit most from educational interventions.
  - (3) A basis for planning individual prescriptions for both remediation and enrichment.
  - (4) A tool for tutors and academic coaches to help students identify areas they need to improve for different courses.
  - (5) A tool for a learning center to use to determine areas of greatest need for workshops, seminars and independent study.
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- (6) A means for instructors to use for examining individual students' scores and class trends to help them decide where to place the greatest emphasis for assignments, projects, individual logs, journals, portfolios and other class activities.
  - (7) A pre-post achievement measure for students participating in programs or courses focusing on learning strategies and study skills.
  - (8) An evaluation tool to assess the degree of success of intervention courses or programs.
  - (9) An advising/counseling tool for college orientation programs, first-year experience or seminar courses, advisors, developmental education programs, learning assistance programs, and learning centers.

## **Introduction to the LLO Scales**

There are six items on each of the ten scales of the LLO. These scales are: Anxiety, Attitude, Concentration, Information Processing, Motivation, Selecting Main Ideas, Self Testing, Test Strategies, Time Management, and Using Academic Resources.

Each of these scales is primarily related to one of three of the components of strategic learning: **skill, will** and **self-regulation**. The conceptual framework of strategic learning underlies each of these components, so there is some overlap and interaction among and within the components and individual scales. However, strategic learners need to know about each of these categories and about how to use information and skills in each of these categories. They also need to know how to pick and choose among the various elements in each category to help them reach specific learning goals and objectives.

## **The Skill Component of Strategic Learning**

The LLO scales related to the skill component of strategic learning are: **Information Processing, Selecting Main Ideas, and Test Strategies**. These scales examine students' learning strategies, skills and thought processes related to identifying, acquiring and constructing meaning for important new information, ideas and procedures, and how they prepare for and demonstrate their new knowledge on tests or other evaluative procedures.

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The **Information Processing Scale** assesses how well students' can use imagery, verbal elaboration, organization strategies, and reasoning skills as learning strategies to help learn new information and skills. These strategies are also used to build bridges between what students already know or believe and what they are trying to learn and remember.

Do students try to summarize or paraphrase their class reading assignments?

Do they try to relate what is being presented in class to their prior knowledge?

The **Selecting Main Ideas Scale** assesses students' thinking skills for identifying important information for further study from less important information and supporting details.

Can students identify the key points in a lecture?

Can they decide what is important to underline in a textbook?

The **Test Strategies Scale** assesses students' use of both test preparation and test taking strategies.

Do students know how to study for tests in different types of courses?

Do they review their answers to essay questions?

## **The Will Component of Strategic Learning**

The LLO scales related to the will component of strategic learning are: **Anxiety**, **Attitude**, and **Motivation**. These scales measure the degree to which students worry about their academic performance, their receptivity to learning new information, their attitudes and interest in college, their diligence, self-discipline, and willingness to exert the effort necessary to successfully complete academic requirements.

The **Anxiety Scale** assesses the degree to which students worry about school and their academic performance.

Do students worry so much that it is hard for them to concentrate?

Are they anxious even when they are well-prepared?

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The **Attitude Scale** assesses students' attitudes and interests in college and achieving academic success.

Do students only study for the courses they like?

Is college really important or worthwhile to them?

The **Motivation Scale** assesses students' diligence, self-discipline, and willingness to exert the effort necessary to successfully complete academic requirements.

Are students willing to put in the effort necessary to succeed on academic assignments?

Do they easily "give up" in difficult classes?

## **The Self-Regulation Component of Strategic Learning**

The LLO scales related to the self-regulation component of strategic learning are:

**Concentration, Self Testing, Time Management** and **Using Academic Resources**.

These scales measure how students manage, self-regulate or control the entire learning process. These processes include: using time effectively, focusing attention and maintaining concentration, checking to determine if learning demands for a class, assignment, or a test have been met, and a willingness to seek help from instructors, fellow students, tutors, academic coaches, learning centers and tutoring programs.

The **Concentration Scale** assesses students' ability to direct and maintain their attention on academic tasks.

Are students easily distracted?

Can they direct their attention to academic tasks?

The **Self Testing Scale** assesses students' use of comprehension monitoring techniques, such as reviewing or paraphrasing, to determine their level of understanding of the information or skill to be learned.

Do students create and respond to questions that might be asked on a test?

Do they stop periodically while reading to review the content?

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The **Time Management Scale** assesses students' use of time management principles and practices for academic tasks.

Do students procrastinate about completing academic tasks?

Do they strategically manage their time for studying?

The **Using Academic Resources Scale** assesses students' willingness to use different academic resources such as writing support, tutoring support and learning or academic support, when they encounter problems with their coursework or performance.

Do students seek a resource for guidance?

Do they avoid going for help?

**NOTES:**

**Sample items for each scale are included in Part 4: Description of the Individual LLO Scales.**

**Coefficient Alphas for the scales range from a low of .76 to a high of .87**

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## PART 3: ADMINISTRATION AND SCORING

The LLO is designed to simplify administration and scoring as much as possible without losing power or diagnostic information. To help achieve this goal, it uses a self-report format and does not require any special administration procedures, such as specially trained personnel. The LLO, is not a timed measure but most students complete it in approximately 9-11 minutes. The scoring is completed online and the scoring reports are computer-generated and available immediately.

For each of the 60 items on the LLO, students are requested to select one of the five responses that corresponds to how well the statement describes them. Students are also cautioned to respond according to how well the statements reflect their behaviors or thinking processes and not how they think they should respond or how others would respond.

The LLO yields ten individual scale scores, one for each of the ten scales. No total score is computed because this is a diagnostic instrument. These scale scores can then be compared numerically or graphically to the norms provided or to local norms or cut-off scores developed by an institution or program. The data provided with the LLO includes percentile score equivalents. Based on a student's scale scores, either in relation to the national norms included with the instrument or to a percentile cut-off score (the 75th percentile being a common cut-off used on many campuses), prescriptions can then be made. For example, if a student scores poorly on the **Test Strategies** Scale, he/she should be advised to concentrate at least part of his/her efforts on learning more about how to prepare for and take tests. A low score on the **Anxiety** Scale indicates a difficulty with focusing attention on task-relevant thoughts and behaviors rather than on fears and concerns about failure and incompetence. The student doing poorly on this scale would need to learn more about dealing with irrational thoughts and negative self-talk. She or he would have to learn how to cope with anxiety-arousing stimuli and take more responsibility for the direction of her or his own thinking processes.

Each LLO contains the following parts:

- 1) An introduction to the inventory.
  - 2) An explanation of how to complete the LLO.
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- 3) The inventory items.
  - 4) Information about interpreting individual scale scores.

All scoring, reporting, and graphics are generated automatically and available to the administrator. The student also receives individual scores unless the administrator has specifically asked for a *No Student Results* version.

It should also be noted that approximately half of the items use reverse scoring to reduce response bias. Some of the items are stated in a positive direction (“I try to identify potential test questions when reviewing my class material.”) while others are stated in a negative direction (“I find it hard to pay attention when presented with new information.”). To get a better overall view of their performance, these total scale scores are shown on a graph using the national norms for each scale to transform the raw scores into percentiles. In this way, relative performance in different areas are assessed.

Students can see how their answers compare to the answers of the norm groups. The graph is also marked off at the 75th and 50th percentiles to facilitate advising and counseling. Students who score above the 75th percentile often do not need to work on the strategies or skills for that scale. Students who score between the 75th and the 50th percentile on any scale should consider improving the relevant learning and study skills to optimize their academic performance. Students who score below the 50th percentile usually need to improve their relevant knowledge and skills to increase their chances of succeeding in a post secondary setting. It should also be noted that these cut-offs could be modified depending on the local setting or the development of local norms. A copy of the national norms used to create the graph can be found in Table 22 of this user’s manual. The data in Table 22 represents the percentile score of students in the norm group that fall at or below a given raw score for each scale.

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## PART 4: DESCRIPTION OF THE INDIVIDUAL LLO SCALES

### ANXIETY

Current conceptions of anxiety emphasize the interactive effects of students' thought processes, beliefs, and emotions along with how they affect academic performance. Cognitive worry, a major component of anxiety, is manifested in negative self-referent statements. These negative thoughts, beliefs and feelings about one's abilities, intelligence, future, interactions with others, or likelihood of success, divert a student's attention from the task at hand, such as studying or taking a test. If a student is worried that he will not have the time to finish a test, then he is just making matters worse by wasting time while worrying about his performance. This type of self-defeating behavior often sabotages a student's efforts. If students are tense, anxious, or fearful about studying or performing in academic situations, this will divert their attention from the academic task and inward toward self-criticism or irrational fears.

Students' scores on this scale measure how tense or concerned they are when approaching academic tasks. Students who score low on this measure (indicating high anxiety) need to learn techniques for coping with anxiety and reducing worry so that they can focus on the task at hand and not on their anxiety. Many very capable students are often incapable of demonstrating their true level of knowledge and skill because they are paralyzed or distracted by debilitating anxiety. In fact, helping some students learn how to reduce their anxiety is sufficient for helping them to improve their performance. Once these attentional blocks are removed, many students show large increases in performance.

Coefficient Alpha = .87

#### Sample Items:

When I am studying, worrying about doing poorly in a course interferes with my concentration.

I feel very panicky when I take an important test.

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## **ATTITUDE**

Students' general attitudes toward school and their reasons, or lack of reasons, for succeeding in school have a great impact on their diligence when studying, particularly in autonomous situations in which they must study on their own. If the relationships between school and life goals (academic, personal, social and work-related goals) are not clear, then it is difficult to maintain a mind-set that promotes good work habits, concentration, attention to school, and its related tasks.

Students' scores on this scale measure their general attitudes and reasons for succeeding in school and interest in performing the tasks related to school success. Students who score low on this measure need to work on higher-level goal setting and reassess how school fits into their future. If school is not seen as relevant to the student's life goals and attitudes, then it will be difficult, if not impossible, to generate the level of motivation needed to help take responsibility for one's own learning and successfully managing one's own study activities.

Coefficient Alpha = .76

### Sample Items:

I have a positive attitude about my classes.

I only study the subjects I like.

## **CONCENTRATION**

Concentration helps students to focus their attention on school-related activities, such as studying and paying attention to new material, rather than on distracting thoughts, emotions, feelings, or situations. People have a limited capacity to process what is going on around them and in their own thoughts; if they are distracted, there will be less capacity to focus on the task at hand. For students this means that distractions, or anything else that interferes with concentration, will divert attention from school-related tasks.

Students' scores on this scale measure their abilities to direct and maintain their attention to school and school-related tasks, including study activities. Students who score high on this measure are effective at focusing their attention and maintaining a high level of concentration. Students who score low on this measure are less successful at focusing their attention on the

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task at hand by eliminating interfering thoughts, emotions, feelings, and situations. They need to learn techniques to enhance concentration and to set priorities so that they can attend to school as well as to their other responsibilities. Learning techniques for focusing attention and maintaining concentration help students implement effective learning strategies and can make learning and studying both more effective and more efficient.

Coefficient Alpha = .85

Sample Items:

My mind wanders a lot when I study.

If I get distracted during class, I am able to refocus my attention.

## **INFORMATION PROCESSING**

Meaningful learning is enhanced by the use of elaboration and organization strategies. These strategies help build bridges between what a student knows and what he or she is trying to learn and remember. Using what we already know (prior knowledge, experiences, attitudes, beliefs, and reasoning skills) to help make meaning out of new information is critical to success in educational and training settings. The difference between an expert and a novice is not just the amount of knowledge they possess but also, and perhaps even more important, the way that knowledge is acquired and organized. It is the difference between storing one thousand folders by throwing them in the middle of a room versus storing them by some meaningful organization in filing cabinets.

Students' scores on this scale measure how well they can create imaginal and verbal elaborations and organizational schemes to foster understanding and recall. Students who score low on this measure need to learn methods that they can use to help add meaning and organization to what they are trying to learn. These methods range from simple paraphrasing and summarizing to creating analogies, the use of application, creating organizational schemes and outlining, and the use of synthesis, inferential, and analytic reasoning skills. A student who does not have a repertoire of these strategies and skills will find it difficult to incorporate new knowledge and understanding in such a way that acquisition and recall will be effective, often despite the large amount of time spent studying. The effectiveness and efficiency of both autonomous and classroom learning are facilitated by the use of information processing strategies.

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Coefficient Alpha = .81

Sample Items:

To help me remember new principles we are learning, I practice applying them.

I try to find relationships between what I am learning and what I already know.

## **MOTIVATION**

The Motivation Scale measures the degree to which students take responsibility for studying, put effort into learning course material, and persist towards reaching their academic goals, especially when facing tasks that are difficult or uninteresting. The Attitude Scale measures students' general attitudes toward school and their reasons for wanting to succeed in school. While the Attitude Scale focuses on positive and negative attitudes that influence motivation, the Motivation Scale focuses on students' levels of academic effort, persistence, and self-diligence. Although general attitudes and general sources of motivation are important, so is a student's motivation to perform the specific tasks related to achievement. These behaviors include reading class material, preparing for class, finishing assignments on time, and being diligent in studying, even if the topic is not particularly interesting to them (or even trying to figure out ways to make it more interesting). Students' beliefs also play a big role in motivation. For example, a student who "knows" (believes) he or she just cannot learn math will find that generating motivation to study or go to someone for help is very difficult.

Students' scores on this scale measure the degree to which they accept responsibility for performing the specific tasks related to school success. Students who score low on this measure need to work on goal setting, perhaps at the more global levels assessed on the Attitude Scale, but certainly at the more specific level of individual tasks and assignments. Accepting more responsibility for studying and achievement outcomes requires that students learn to attribute much of what happens to them in school to their own efforts rather than to outside forces such as luck or poor teachers, or to uncontrollable forces such as innate ability. Accepting more responsibility and attributing success to one's efforts results in more effective studying and academic performance.

Coefficient Alpha = .77

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Sample Items:

When work is difficult I either give up or study only the easy parts.

I set goals for the grades I want to get in my classes.

## **SELECTING MAIN IDEAS**

Effective and efficient studying requires that students are able to select the important material for in-depth processing. Most learning materials contain redundant material, extra examples, and many supporting details to help explain what is being taught or presented. A major academic task involves separating the important from the unimportant or simply didactic information that does not have to be remembered. If a student cannot select the critical information, then the learning task becomes complicated by the huge amount of material the individual is trying to acquire. Lacking this skill also increases the likelihood that the student will not have enough time to study everything that must be covered.

Students' scores on this scale measure their skills at selecting important information to concentrate on for further study. Students who score low on this measure need to learn more about how to identify important information so that they can focus their attention and information processing strategies on appropriate material.

Coefficient Alpha = .86

Sample Items:

I have difficulty identifying the important points in my learning materials.

When studying, I seem to get lost in the details and miss the important information.

## **SELF TESTING**

Reviewing and testing one's level of understanding are important for knowledge acquisition and comprehension monitoring. These strategies both support and contribute to meaningful learning and effective performance. Without them learning could be incomplete or errors might persist undetected. Reviewing and self testing also contribute to knowledge consolidation and

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integration across topics. Using mental reviews, going over class notes and the text, thinking up potential questions to guide reading or help prepare for an exam are all important methods for checking understanding, consolidating new knowledge, integrating related information (both from what is being learned and from what is already known), and identifying if additional studying must be done.

Students' scores on this scale measure their awareness of the importance of self testing and reviewing and the degree to which they use these methods. Students who score low on this scale need to learn more about the importance of self testing as well as specific methods for reviewing school material and monitoring their comprehension. These methods include structured reviews of large amounts of material; mental reviews of individual study segments; asking questions before, during, and after reading, studying, or going to class; trying to use new information in novel ways; trying to apply a principle or method; and using a systematic approach to studying.

Coefficient Alpha = .80

Sample Items:

I stop periodically while reading and mentally go over or review what was presented.

To check my understanding of the material in a course, I make up possible test questions and try to answer them.

## **TEST STRATEGIES**

Effective test performance depends on both preparation strategies and test-taking strategies. A student needs to know how to prepare for the type of performance that will be required and how to maximize that performance. Test preparation includes knowing about the type of test they will be taking. For example, is it going to be a short-answer or a multiple-choice exam? Will performance require simple recall or will concepts, principles, and ideas need to be applied? Test preparation also includes knowing about methods for studying and learning the material in a way that will facilitate remembering the material and using it at a later time. Test-taking strategies include knowing about the characteristics of tests and test items, and how to create an effective test-taking plan.

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Students' scores on this scale measure their use of test-taking and test-preparation strategies. Students who score low on this measure may need to learn more about how to prepare for tests, how to create a plan of attack for taking a test, the characteristics of different types of tests and test items, and how to reason through to an answer. Often, students' performance on a test is not an accurate indicator of what they have learned. Knowing about test-taking and test-preparation strategies and how to use them helps students target their study activities, set up useful study goals, implement an effective study plan, and demonstrate their knowledge and skill acquisition so it can be accurately evaluated.

Coefficient Alpha = .77

Sample Items:

I have difficulty adapting my studying to different types of courses.

I review my answers during essay tests to make sure I have made and supported my main points.

## **TIME MANAGEMENT**

Managing time effectively is an important self-regulation strategy for learning. Most students have various demands on their time; only by creating realistic schedules and using them can they fit in much or all of what they need to do. Creating and using schedules also encourages students to take more responsibility for their own behavior. It requires some knowledge about themselves as students and learners. What are their best and worst times of day? Which subjects are easier or harder for them? What are their preferences for learning methods? This type of knowledge and self awareness helps students to create workable schedules, and perhaps even more importantly, it helps students to create the motivation to use them.

Students' scores on this scale measure the degree to which they create and use schedules. Students who score low on this scale may need to learn about how to create a schedule and how to deal with distractions, competing goals, and procrastination. Accepting more responsibility for studying and achievement outcomes requires that students set realistic school goals and create plans that will facilitate goal achievement. Effective time management enhances these activities.

Coefficient Alpha = .80

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Sample Items:

I find it hard to stick to a study schedule.

I set aside more time to study the subjects that are difficult for me.

## **USING ACADEMIC RESOURCES**

Students need to know about and how to access and use a variety of academic resources designed to help them understand, learn, and retain what they are studying in their classes. Almost all post secondary educational institutions provide one or more of the following academic success resources: student success support, learning support, tutoring support, academic coaches, writing support, math support, and mentoring. Students can also use more localized sources of help, such as instructors' meeting times, student study groups and other classmates. When students encounter problems comprehending, learning or applying course concepts and skills, they need to seek help. Even though students may know they need learning assistance, many students are hesitant, even embarrassed, to seek help from others. The research literature on help-seeking suggests three major types of help-seeking approaches used by students: (1) avoidance help-seeking refers to students who do not want to ask for help, (2) executive help-seeking refers to students who just want someone to give them the answer (whether they understand it or not), and (3) instrumental help-seeking refers to students who seek help and want the answer but also want to learn how to do it on their own. Success and thriving in college requires an emphasis on instrumental help-seeking.

Students' scores on this scale measure their awareness, knowledge about, and use (or intended use) of informal and formal academic resources commonly available to students at 2-year and 4-year post secondary institutions. Students who score low on this scale may need help identifying and effectively using resources as the need for learning assistance becomes apparent. It is important to tell students about tutoring support and other services at orientation, but students are not generally concerned about grades at that point. After their first assignment or test, the information may be perceived as more timely and relevant. In order to better reach students as their concerns are arising, present different student support services after classes are underway, as well as during orientation. Also, share testimonials from past and current students about their experiences using academic resources. Even when students do not like a course, they still have to learn the information for the final exam or semester project; seeking

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help can provide students the necessary scaffolding to reach their goals. Students can also develop more effective learning strategies when they seek help.

Coefficient Alpha = .76

Sample Items:

If I am having trouble with a writing assignment, I seek help from resources available from my college such as writing support, learning support, or tutoring support.

I am not comfortable asking for help from instructors in my courses.

## PART 5: ADMINISTERING THE LLO

This section will guide you through the process of administering the LLO.

### Administering the LLO

The LLO is administered online and requires only an Internet connection and a web browser. There are no special plug-ins required. Upon placing an order for the LLO, you will receive an email with attached PDF instructions. There is a page of student instructions and a page of administrator instructions. Students are directed to a website where they enter a school number, username and password. The next page will ask for their first and last names, email and student id#. The next page is the LLO assessment. Once students answer the items and hit submit, their results are immediately available.

Although there is no time limit, it is estimated that it will take about 9-11 minutes to complete all items.

### LLO Administrative Account

Administrators of the LLO can view previously administered results, download raw data, and review the status of their institution's account by locating the URL provided on the Administrator Instruction Sheet.

The following information is available to administrators through the Administrative website:

- The **Search** link allows you to search for individual students and displays a report of the following results:
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- Student Name, ID Number, Administration Date
  - Percentile rankings along with an explanation of the ten scales
  - A link to the student's original LLO results
  - A link to a report that details how the student responded to all LLO items
  - A link to a counselor/advisor report that shows a side-by-side comparison of how a student responded to all items on both the pre- and post-test LLO (for students who have taken both pre- and post-tests)
  - The **Student Keys** link shows a list of student keys for each student who has taken the pre-test of the LLO. A student key is required to take the post-test.
  - The **Raw Data** link allows you to download an Excel file of your school's raw data. The file includes each student's name, ID, email, student key, test date/time, ten percentile scores, ten raw scores, and item scores.
  - The **Status** link shows how many administrations your institution was issued, the date they were issued, and the number remaining to be used.
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## **Search Records**

Click "Search Records" without entering any search parameters to find a list of all students in your account. Use the fields to refine your search and return fewer records. For example, search by date or particular student name.

## **Item Response Report**

The Item Responses report groups the LASSI items by scale. All the items that make up the ten scales along with how the student responded to each are shown. A score of 1 is least desirable while a 5 is the most desirable. This report can be a valuable resource for counselors and academic advisors.

## **Advisor/Counselor Report**

This report displays ten percentiles, 10 raw scales scores and the percentage change in raw score from pre- to post-test. Responses for both pre- and post-test are also shown.

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## **Student Keys**

Student Keys are unique and generated upon completion of a pre-test. Students will use a Student Key along with a School Number to take a post-test

## **Raw Data**

The Raw Data link allows you to download a file of your school's raw data. The file includes each student's name, ID, email, student key, test date/time, ten percentile scores, ten raw scores, and 60 item scores. The file can be opened with Excel, SPSS, or any other spreadsheet or data-analysis program.

## **Account Status**

The "Status" button relates to the number of administrations remaining in your account. Unused administrations do not expire. When reordering, note your school number so we can add new administrations to your existing account.

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## Appendix A: Descriptions of the Field Test and Norming Sample (Tables 1-9)

**Table 1: Sample Size by Type of Institution**

	Number of Institutions			Number of Students		
	Public	Private	Total	Public	Private	Total
Community College or Junior College	7	0	7	518	0	518
4-Year College	1	4	5	1	257	258
4-Year University	7	3	10	389	178	567
Adult Education Program	1	0	1	43	0	43
Grand Total	16	7	23	951	435	1386

**Table 2: Sample Size by Geographic Location**

	Number of Institutions				Number of Students			
	Urban	Suburban	Rural	Total	Urban	Suburban	Rural	Total
New England	0	1	0	1	0	34	0	34
Mid-Atlantic	0	1	1	2	0	1	48	49
East North Central	3	1	0	4	232	17	0	249
West North Central	1	0	2	3	29	0	140	169
South Atlantic	1	4	0	5	99	251	0	350
East South Central	0	2	0	2	0	201	0	201
West South Central	1	0	0	1	99	0	0	99
Mountain	1	0	1	2	20	0	52	72
Pacific	2	0	0	2	127	0	0	127
Nova Scotia, Canada	0	1	0	1	0	36	0	36

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Grand Total	9	10	4	23	606	540	240	1386
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<b>Table 3: Race/Ethnicity by Gender</b>			
Race/Ethnicity	Female	Male	Total
American Indian or Alaska Native	8	2	10
Asian	35	17	52
Black or African American	173	142	315
Hispanic or Latino	125	79	204
Native Hawaiian or Other Pacific Islander	2	3	5
White or Caucasian	408	341	749
Other	23	28	51
Grand Total	774	612	1,386

<b>Table 4: Age by Gender</b>			
Age	Female	Male	Total
17 or Younger	18	9	27
18-19	376	361	737
20-21	135	103	238
22-23	53	42	95
24-25	32	20	52
26 or Older	160	77	237
Total	774	612	1,386

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**Table 5: Race/Ethnicity by Age**

Race/Ethnicity	17 or Younger	18-19	20-21	22-23	24-25	26 or Older	Total
American Indian or Alaska Native	0	6	1	2	0	1	10
Asian	4	16	11	6	2	13	52
Black or African American	6	164	55	31	12	47	315
Hispanic or Latino	3	127	23	9	5	37	204
Native Hawaiian or Other Pacific Islander	0	4	0	0	0	1	5
White or Caucasian	12	399	135	47	30	126	749
Other	2	21	13	0	3	12	51
Total	27	737	238	95	52	237	1,386

**Table 6: Ethnicity by Age – Males**

Race/Ethnicity	17 or Younger	18-19	20-21	22-23	24-25	26 or Older	Total
American Indian or Alaska Native	0	2	0	0	0	0	2
Asian	0	8	3	3	1	2	17
Black or African American	4	73	27	20	6	12	142
Hispanic or Latino	0	51	8	4	1	15	79
Native Hawaiian or Other Pacific Islander	0	2	0	0	0	1	3
White or Caucasian	4	213	57	15	10	42	341
Other	1	12	8	0	2	5	28
Total	9	361	103	42	20	77	612

**Table 7: Ethnicity by Age – Females**

Race/Ethnicity	17 or Younger	18-19	20-21	22-23	24-25	26 or Older	Total
American Indian or Alaska Native	0	4	1	2	0	1	8
Asian	4	8	8	3	1	11	35
Black or African American	2	91	28	11	6	35	173
Hispanic or Latino	3	76	15	5	4	22	125
Native Hawaiian or Other Pacific Islander	0	2	0	0	0	0	2
White or Caucasian	8	186	78	32	20	84	408
Other	1	9	5	0	1	7	23
Total	18	376	135	53	32	160	774

**Table 8: First Time in College Status**

	Total
Previously Enrolled in College	566
First Time in College	820
Total	1,386

**Table 9: Current Reason for Enrolling in College Courses**

	Total
1- or 2-Year Certificate	95
2-Year Associates Degree	183
4-Year Degree	737
Transfer to a 4-Year College or University	246
Other	125
Total	1,386

## Appendix B: Summaries of the Item Statistics for Each LLO Scale (Tables 10-19)

**Table 10: Item Statistics for the Anxiety Scale (Coefficient Alpha = .87)**

Item Number	Item Mean	Standard Deviation	Item-Total r Excluding This Item	Coefficient Alpha Excluding This Item
28	2.576	1.314	0.754	0.827
34	2.908	1.275	0.759	0.826
37	3.672	1.433	0.511	0.873
50	2.495	1.297	0.693	0.838
53	2.950	1.283	0.556	0.861
56	3.152	1.204	0.729	0.833

**Table 11: Item Statistics for the Attitude Scale (Coefficient Alpha = .76)**

Item Number	Item Mean	Standard Deviation	Item-Total r Excluding This Item	Coefficient Alpha Excluding This Item
14	3.759	1.078	0.371	0.762
29	4.009	0.939	0.462	0.738
32	4.019	1.195	0.571	0.708
39	4.023	1.110	0.524	0.721
42	3.682	0.977	0.601	0.703
59	4.208	0.925	0.514	0.726

**Table 12: Item Statistics for the Concentration Scale (Coefficient Alpha = .85)**

Item Number	Item Mean	Standard Deviation	Item-Total r Excluding This Item	Coefficient Alpha Excluding This Item
6	3.287	1.007	0.611	0.829
13	3.163	1.087	0.695	0.812
25	2.592	1.170	0.693	0.812
40	3.336	1.108	0.612	0.828
47	3.113	1.150	0.708	0.809
58	3.716	0.956	0.475	0.851

**Table 13: Item Statistics for the Information Processing Scale (Coefficient Alpha = .81)**

Item Number	Item Mean	Standard Deviation	Item-Total r Excluding This Item	Coefficient Alpha Excluding This Item
3	3.989	0.893	0.564	0.784
10	3.211	1.033	0.494	0.799
18	3.720	0.943	0.622	0.771
22	3.701	1.004	0.457	0.806
35	3.400	1.100	0.612	0.772
41	3.553	1.042	0.695	0.752

**Table 14: Item Statistics for the Motivation Scale (Coefficient Alpha = .77)**

Item Number	Item Mean	Standard Deviation	Item-Total r Excluding This Item	Coefficient Alpha Excluding This Item
1	3.554	0.993	0.523	0.739
17	3.849	1.016	0.509	0.743
24	3.924	0.967	0.616	0.715
31	4.031	0.884	0.601	0.722
33	4.076	0.997	0.429	0.763
45	4.202	0.969	0.450	0.757

**Table 15: Item Statistics for the Selecting Main Ideas Scale (Coefficient Alpha = .86)**

Item Number	Item Mean	Standard Deviation	Item-Total r Excluding This Item	Coefficient Alpha Excluding This Item
9	3.508	1.162	0.629	0.846
16	3.425	1.091	0.712	0.830
19	3.395	1.077	0.694	0.833
44	3.343	1.086	0.631	0.845
48	3.483	1.075	0.703	0.832
55	3.519	0.988	0.573	0.854

**Table 16: Item Statistics for the Self Testing Scale (Coefficient Alpha = .80)**

Item Number	Item Mean	Standard Deviation	Item-Total r Excluding This Item	Coefficient Alpha Excluding This Item
15	2.820	1.257	0.544	0.778
20	2.888	1.215	0.586	0.767
26	3.376	1.069	0.440	0.798
38	2.970	1.180	0.602	0.763
49	2.639	1.189	0.622	0.758
52	3.334	1.091	0.571	0.771

**Table 17: Item Statistics for the Test Strategies Scale (Coefficient Alpha = .77)**

Item Number	Item Mean	Standard Deviation	Item-Total r Excluding This Item	Coefficient Alpha Excluding This Item
5	3.367	1.073	0.546	0.720
21	3.398	1.015	0.544	0.721
30	3.253	1.075	0.599	0.705
36	3.452	1.018	0.588	0.710
43	3.781	1.032	0.231	0.797
57	3.512	1.091	0.557	0.717

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**Table 18: Item Statistics for the Time Management Scale (Coefficient Alpha = .80)**

Item Number	Item Mean	Standard Deviation	Item-Total r Excluding This Item	Coefficient Alpha Ex- cluding This Item
4	2.985	1.182	0.593	0.762
8	3.102	1.164	0.473	0.790
11	2.543	1.217	0.659	0.746
23	2.742	1.207	0.705	0.734
51	3.500	1.094	0.456	0.793
54	3.138	1.103	0.461	0.792

**Table 19: Item Statistics for the Using Academic Resources Scale (Coefficient Alpha = .76)**

Item Number	Item Mean	Standard Deviation	Item-Total r Excluding This Item	Coefficient Alpha Ex- cluding This Item
2	3.429	1.141	0.560	0.716
7	3.683	1.145	0.493	0.733
12	2.913	1.293	0.535	0.721
27	3.566	1.230	0.483	0.735
46	3.198	1.288	0.617	0.697
60	3.388	1.139	0.351	0.766

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## Appendix C: Individual Scale Statistics (Table 20)

Scale Name	Scale Mean	Standard Deviation	Coefficient Alpha
Anxiety	17.753	6.048	0.866
Attitude	23.701	4.223	0.762
Concentration	19.207	4.905	0.849
Information Processing	21.576	4.323	0.811
Motivation	23.636	3.994	0.774
Selecting Main Ideas	20.673	4.997	0.863
Self Testing	18.027	4.980	0.804
Test Strategies	20.761	4.276	0.765
Time Management	18.011	4.939	0.802
Using Academic Resources	20.175	4.907	0.764

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# Learning and Study Strategies Inventory For Learning Online

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