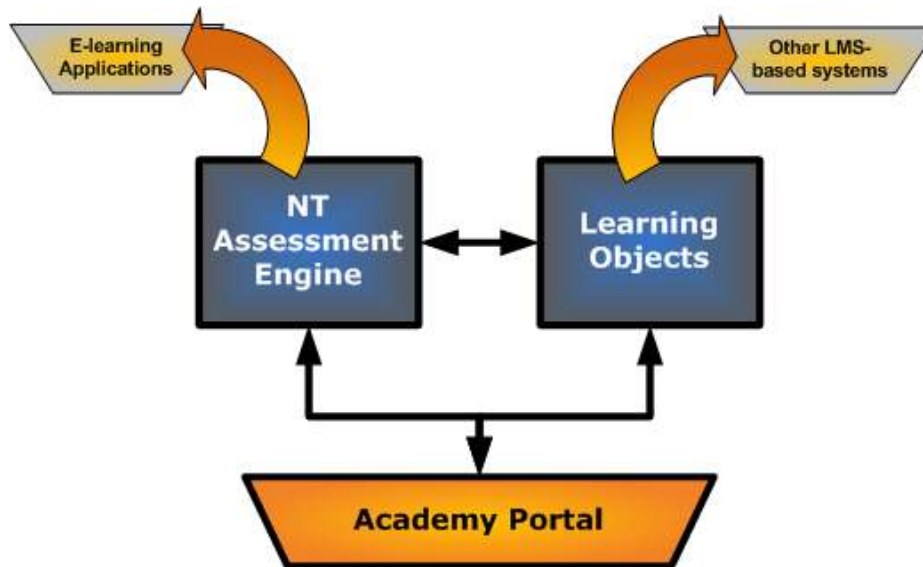


The CTL2 Assessment Strategy

CTL2's Noesis Tickler™ Assessment Engine

The CTL2 Learning Instruments platform consists of three stand-alone products: the Noesis Tickler Assessment Engine (*tickler engine* for short), ELATS reusable *learning objects* that organize and present content, and the *academy portal*, which provides a comprehensive presentation and tracking framework.



E-Learning Assessment and Tutoring System
(ELATS)

Whether you are looking for a turnkey e-learning environment or simply a way to evaluate an existing curriculum (online or in the classroom), the *tickler engine* provides the most advanced, yet cost-effective, solution:

- Rich question types
- A variety of administrative options
- Highly-configurable learner feedback
- Sophisticated (automated) evaluation techniques
- Comprehensive tracking
- High-stakes assessment solution
- Flexible reporting

The *tickler engine* is extremely Web portable and easily customizable to provide evaluation of a learner in conjunction with any e-learning application.

Rich Options for Performance Assessment

The Learning Instruments ELATS platform is designed to provide authentic learning contexts and to evaluate performance using activities that mimic critical on-the-job actions. The *tickler engine* is integrated with other ELATS objects to track complex actions encompassing construction of logical arguments, spatial orientation, oral presentation, and expressing observations / conclusions in a learner's own words.

A Broader Definition of Assessment

Assessment and testing, though related, are not equivalent. Testing is but one technique for assessing learner performance.

Why isn't there better assessment? E-learning budgets usually don't include resources for creating assessments. Further, in adult learning contexts, reasons abound to forgo assessment altogether (apprehension, complacency, etc). And when assessment is conducted, it is most often the ubiquitous *multiple-choice* test—easy to score (in an automated environment). *Multiple-choice* tests do not, however, mimic job performance nor do they foster a spirit of responsibility and initiative. To overcome this limitation, the *tickler engine*, integrates¹ job-related activities with testing to assess the learner.

Rich Options for Questions

The *tickler engine* supports a variety of question types and options:

- *Fixed* interrogatives (*multiple choice* and *true-false*) allow a learner to select one response from a list. *Multiple response* questions support scenarios where a group of responses is correct. Fixed responses can also be rendered in a question body as a drop-down menu.
- *Text entry* interrogatives (fill-in-the-blank questions) allow the learner to construct their own response. The *tickler engine* supports interrogatives with multiple blanks. Blanks may also be filled with initial text (so the learner edits what is provided as opposed to starting from scratch). The *tickler engine* allows the author to supply a list of correct responses or evaluate an entry using *regular expressions*.²
- *List organization* and *matching* interrogatives provide mechanisms that are not quite so dependent upon verbally mediated questions.
- *Point and click* and *drag and drop* interrogatives again require less verbal mediation and can be used like puzzles.
- *Rich media* questions support graphics, video, links to external information, and Flash animations so questions can be interesting and simulate different learning contexts.

¹ Refer to the CTL2 demonstration of ELATS objects to view how the *tickler engine* is integrated

² Regular expressions are complex search strings.

Options for Administering Assessments

In addition to a variety of question types, the *tickler engine* supports features that allow an author to choose how tests are administered. Questions are clustered together within tests so they can be administered in a similar way. Clusters can be configured to:

- Include introductory or summative material as well as instructions that pertain to the set of questions as a whole
- Present questions in random order or prescribed sequences; for questions with fixed responses, the list order can also be randomized
- Provide multiple levels of feedback—or no feedback—to a learner; feedback options include: pop-up hints, immediate feedback after a response, and a status report at the end
- Weight questions or associate them with duties and tasks, etc.
- Time a learner's responses
- Allow a learner to skip questions or select which questions to answer first
- Branch to different questions depending upon whether a learner got the previous question correct or incorrect
- Link to information sources or course pages

Tests can be secured so that a learner has only one try or, conversely, allow a learner to repeat the test as often as desired and record the highest score.

APA High-Stakes Assessment

What is high-stakes assessment? Any test for which the outcome has legal or other consequences is considered high-stakes. Obviously such assessments require rigorous validation and the outcome of each learner's actions scrutinized carefully using psychometric techniques.

The *tickler engine* provides data collection and reporting capabilities that allow authors of certification exams to develop test protocols and reporting schemes to comply with their program guidelines, i.e. item analysis and other statistical models are supported by the *tickler engine's* data collection and reporting features.

The ELATS platform extends the range of analytic techniques that can be applied to assessments. Basic statistical analysis of test scores correlates individual scores with the entire sample space (mean scores, standard deviations, etc.). Item analysis associates each question with a particular facet of performance and analyzes how well the test discriminates between higher- and lower-performing individuals. The tickler engine acquires all the data required to perform these analyses. In addition, the ELATS system also allows an author to correlate test scores with a learner's engagement level on instructional materials pertaining to the job tasks, thus extending the kind of analyses that psychometricians can perform.

Acquiring Test Data

In addition to presentation features (randomization, feedback, timers, etc.), the *tickler engine* provides sophisticated data acquisition that supports high-stakes assessment scenarios.

Question (items) can be associated with a role's duties and tasks. Each learner's responses to each item are stored (question ID, response(s), evaluation [correct/incorrect]). Learners can be grouped demographically. Demographic information can be collected at registration time or during the preparation for the test. Additional cognigraphic data may be collected using ELATS objects and employed to analyze test results.

Reporting test Results

If you are intending to use the *tickler engine* with a third-party system then reporting is dependent upon that system's capabilities. In combination with the Learning Instruments™ *Academy portal*; however, an administrator can use the academy's dashboard to view at-a-glance individual performance updates and drill-down on specific results. The *academy* is also designed to allow managers to monitor *team readiness*.

But the academy portal is primarily about learners. The sophisticated performance analysis is presented directly to the learner so each person can take control of their own training.

Integrating the NT Assessment Engine with Other E-Learning Platforms

The tickler engine is a standalone product that works with virtually any e-learning system or tool. *Tickler engine* technology is completely Web portable so individual tests can be deployed from either a Linux or Microsoft Web server. Tests are browser independent.

Integration with Other LMS (Database-Driven) Systems

Most LMS applications do not provide a test engine even though they accommodate storing and reporting scores. No problem! The *tickler engine*, as mentioned, can be deployed from any common Web server. To perform the (seamless) integration with an LMS, two simple interfaces must be supplied: a link (*url* to a simple HTML page containing the test) and a single (ASPX or PHP) page to parse and store the test results. In practice, creation of the interfaces takes approximately two days of a programmer's time.

Once the interface has been created, the LMS can report the score directly, create any canned report that is supported, or download raw data from the test results to an administrator for analysis.

Linking to Curriculum and External Instructional Materials

Once a learner has taken a test, the *tickler engine* reports performance. This report contains the learner's responses, correct answers, and any feedback that an author wants the learner to view. In addition, the status report provides, for each individual question, links to instructional materials that remediates the answer.

In this way, a *tickler* can be used as a highly-efficient presentation manager.

Summary: Why Adopt the Noesis Tickler Assessment Engine?

Increase Retention: Interrogative engagement is essential to "fixing" knowledge in long term memory; *ticklers* increase retention:

- Initially, assessments help determine what a learner needs to get out of their training. Diagnostic Assessments increase efficiency because they determine whether a learner should work through or skip a particular lesson. The diagnostic process also sets expectations about upcoming material.
- Questions can deepen understanding and build a mental picture of knowledge. Formative assessments rephrase or reformat content so the learner experiences it from multiple points of view. Assessments provide repetition with content without being boring.
- And finally, questions verify that knowledge was acquired.

Cost Effective E-Learning Assessment Solution: The *tickler engine* is a standalone product that works with virtually any e-learning system or tool.

- *Tickler engine* technology is light-weight, completely Web portable and browser independent.
- The *tickler engine* provides a simple integration pathway for developers.
- The *tickler engine* provides a high-stakes assessment solution.
- The *tickler engine* integrates with rich learning context applications to mimic job performance.