

Tracking Competencies and Developing Skills Inventories with LearnFlex™

*Dr. Gary Woodill
Chief Learning Officer
Operitel Corporation*

*Pierre Cahorn
Account Manager
Operitel Corporation*



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Competencies are areas of knowledge or skill that are critical for producing key outputs in an organization (Sanders, 2001). One needs to distinguish between organizational or core competencies that apply across an organization, and individual competencies that need to be attained by a specific person.

Skills inventories are built from the data collected by competency tracking. By classifying tracked competencies into different types, and associating these types of competencies with different job positions or business units, skill inventories can be built as a reporting function of a learning management system (LMS) that tracks competencies.

Competency-based education began in the early 1970s in the United States as part of a movement towards accountability in schools. It was influenced both by the 1960s trend towards individualization and the increasing use of behavioural objectives. Systematic educational objectives had been developed in the late 1940s and early 1950s as part of the growing popularization of Bloom's Taxonomy of Educational Objectives, with its cognitive, affective, and psychomotor domains (Woodill, 2004).

On the corporate front, David McClelland (1973), a well-known Harvard professor famous for his work on achievement motivation, articulated a performance-based definition of competency. He asked a set of high-performing American foreign service information officers their secrets of success, and decided that there were a number of personal characteristics necessary for anyone to achieve high performance in any role. He called these characteristics “competencies”, defined as “...an underlying characteristic of an individual which is causally related to effective or superior performance in a job”. By 1990 McClelland had distinguished between two levels of competencies, differentiating” competencies that distinguish superior from average performers, and “threshold” or “essential” competencies needed to perform a job at a minimal or average level (Spencer, McClelland and Spencer, 1990). Zwell (2000) has suggested that threshold competencies be called “skills” to distinguish them from differentiating competencies.

According to McClelland and his colleagues, “competencies can be motives, traits, self concepts, attitudes or values, content knowledge, or cognitive or behavioral skills – any individual characteristic that can be measured or counted reliably and that can be shown to differentiate significantly between superior and average performers, or between effective and ineffective performers...Competencies include an intention, action and outcome” (Spencer et al., 1990, cited in Radsma). McClelland felt that companies should hire based on competencies rather than test scores.

Competency tracking is often associated with quality control within an organization. The quality movement within corporations began in 1950 with Dr. W. Edwards Deming, who developed modern quality control methods for Japanese industries. “Deming emphasized that quality, not quantity was the main goal. Quality processes, when combined with continuous quality improvement, would drive efficiency up and costs down. This, coupled with research into customer needs and expectations, with secure long-term success for an organization. Deming's approach was ultimately dubbed Total

Quality Management (TQM)” (Hogg, 2005). The 1980s movement towards *performance management* was also part of this trend, starting with Richard Boyatzis’ 1982 book *The competent manager: a model for effective performance*. “This book proved to have considerable influence on the profession and, over the following two decades, competency frameworks, became an increasingly accepted part of modern HR practice” (Hogg, 2005). A recent benchmarking study in the UK found that 76 out of the 100 companies surveyed used competencies in their organization. Competencies are “now part of the standard tool kit of HR professionals” (Rankin, 2004).

Setting Up a Competency Tracking System using LearnFlex

Not all learning management systems track competencies, or have the adaptability of LearnFlex. LearnFlex can be easily configured for a wide variety of competency models, and adjusted for specific requirements for individual employees. Setting up competency tracking in LearnFlex can be carried out in the following seven easy steps:

- *Step One:* Develop a competency model
- *Step Two:* Define each competency
- *Step Three:* Set up the competency model in the learning management system
- *Step Four:* Enter competencies (or link to existing competencies in an external database) and associate them with specific jobs and training events
- *Step Five:* Enter the criteria for how each competency can be attained
- *Step Six:* Adapt the criteria for individual employees
- *Step Seven:* After a period of time tracking competencies, generate reports such as a Skills Inventory or a Skills Gap Analysis, or send data to a Human Resources Management system.

These seven steps will result in the ability to generate business analytics and to align training courses and events to the individual needs of employees in an organization. Here are more details on how each step is carried out using LearnFlex.

Step One: Develop a competency model

The first step in developing a competency tracking system is carried out before there is any use of the learning management system. An organization should begin by creating its own *competency model*. Wagner (2000) says that a competency model “is a collection of related descriptions of the knowledge, skills, abilities and behaviors of an excellent performer.” Organizations can construct templates for sets of competencies based upon “best practices” for a given job. Developing a competency model means to set up a

framework that collects all the traits necessary for an organization's personnel to succeed in their jobs.

According to Lucia and Lepsinger (1999), a well constructed competency model can address the following business needs:

- Clarifying job and work expectations
- Hiring the best available people
- Maximizing productivity
- Enhancing the feedback process
- Adapting to change
- Aligning behaviour with organizational strategies and values

Lucia and Lepsinger (1999) list seven different approaches to developing competency models. Through different methods they all try to determine why top performers in an organization are successful, and what they actually do.

Step Two: Define each competency

Once a competency model or framework has been set up, each individual competency must be rigorously defined and described. There are standardized schemas for doing this, such as using the IEEE Competency Definition Standard or the IMS Reusable Definition of Competency or Educational Objective (RDCEO). One rigorous application of the RDCEO competency definition is used in Singapore, resulting in a Competency Definition Information Model with the following items for each competency:

- Identifier
- Title
- Description
- Definition
- Metadata

Whatever schema you use, LearnFlex is able to adjust to different vocabularies and descriptions of a competency. Unlike most competency models, each competency in LearnFlex is attached to a "competency authority," that is, the LMS records the person or organization who controls the definition and evaluation criteria of a particular competency.

Learnflex can be modified to follow a wide variety of hierarchies for classifying the definition of a competency. The default levels are:

- External ID:
- Competency Name:
- Competency Authority
- Competency Type:
- Competency Outcomes

Metadata is collected by associating each competency to personalized user information such as community, business unit, job position, evaluation criteria and whether the competency is optional or mandatory.

Step Three: Set up the competency model in the learning management system

The original LearnFlex Competency Model was developed in conjunction with the requirements of several different clients, but can be adjusted to fit the needs of a variety of other competency models.

In LearnFlex, competencies are skills or capabilities attained through assessments, completion of courses and other educational events, or they are manually entered if they are attained in some other way. An administrator can define the competencies that are associated with a particular job position and also what courses a user can take to develop a given competency.

Competency Authority

A competency authority is a governing body that oversees the delivery or governance of a competency. To add or edit a competency authority, one defines the name of the competency authority for each deployed language and provides an External ID for external reporting purposes.

Competency Type

A Competency Type provides a manner in which to group competencies. The way that competencies are grouped is completely user-dependant, and varies from one LearnFlex deployment to another. To add or edit a competency type, define its name for each deployed language and provide an External ID for external reporting purposes.

Competency Outcome

This is the competency itself. To add or edit a competency outcome, choose the competency authority and competency outcome type, and then define the name of the competency outcome in each deployed language and an External ID for external reporting purposes.

Adding Metadata

Job Position Group - These are the job positions that can be associated with competencies. To add or edit a Job Position, define it for each deployed language and choose an External ID to represent the Job Position in external reporting.

Job Position Competency - This is the page in LearnFlex where job positions are associated with competencies. First, choose a Job Position group from the first drop-down. Then choose the competency outcome to associate to that job position by choosing the competency authority and competency type. Click the Show button to list the competency outcomes for this competency authority and competency type.

Step Four: Enter competencies and associate them with specific jobs and training events

Select a competency outcome from the list and click either the Mandatory or Optional radio button to define whether the competency is mandatory or optional for the selected job position. Finally, click the << button to associate the competency outcome to the selected job position. You can also remove competencies and change them from mandatory to optional or vice-versa by using the Remove, Change to Mandatory, and Change to Optional buttons associated with the mandatory and optional competency lists that appear toward the left side of the page.

The screenshot shows the 'Assign Job Position Competency' screen in the LearnFlex system. The top navigation bar includes 'Settings', 'Users', 'Courses', 'Registration', 'Messages', and 'Reports'. The 'Competency' menu item is active. The main content area is titled 'Assign Job Position Competency' and features a 'Job Position Group' dropdown menu currently set to 'Staff'. Below this, there are two sections: 'Mandatory' and 'Optional'. Each section contains a 'Remove' button and a 'Change To Optional' (for Mandatory) or 'Change to Mandatory' (for Optional) button. To the right, there are two dropdown menus: 'Competency Authority' set to 'Select Governance' and 'Competency Outcome Type' set to 'Select Competency Outcome Type'. A 'Show' button is located below these dropdowns. At the bottom of the screen, there are radio buttons for 'Mandatory' (which is selected) and 'Optional'. The 'Competency Outcome' list box is currently empty.

Figure 1: Job Position Competency Screen

Competency Administration - This interface allows you to administrate competencies for users. The user's job position is shown in the first drop-down. You can change the value of this drop-down to browse the competencies for other job positions, but you cannot change the user's job position using this interface. To do that, return to the main page of the user's profile (Basic Information).

Competency Map - The competency map for a course allows a user to define which of the competencies for a job position can be obtained through taking the course. Note that only the competencies defined for the job positions selected on the course basics page for the course will appear on the competency map. On this page, the competencies are organized according to competency types, which appear as the headings for the competencies. To see the individual competencies within a competency type, click the competency type name or the down arrow button toward the right of the title. Selecting a competency

defines the successful completion of that course as fulfilling the attainment criteria for that competency. When the course is successfully completed, that competency is moved to the learner's achievement record. When you have defined the competencies that the course provides, click the Save button.

Step Five: Enter the criteria for how each competency can be attained

The recording of attained competencies can be carried out in several ways using LearnFlex. When a course is successfully completed (by whatever criteria that are entered into LearnFlex), then the competencies associated with that course are included in the learner's achievement record.

As well, competencies can be attained by the successful passing of pre-assessments or post-assessment tests. Evaluator, the advanced assessment module that is part of the LearnFlex suite of flexible learning technologies, can be used for such assessments, as well as for generating skills gap analyses for both individuals and an organization as a whole.

Finally, the attainment of a competency can be manually entered by an instructor or an administrator with proper security clearance. These choices are presented to the person setting up the criteria for the attainment of competencies via a drop-down menu.

Step Six: Adapt the criteria for individual employees

Once criteria for attaining competencies have been entered for specific job position, this information can be fine tuned for an individual user.

The rest of the Competencies Management interface is in a tabular format. The Competency column shows the competency types and competency outcomes for the chosen job position. The Competencies Authority column shows the authority for that particular competency. The Achieved column either shows the date the competency was achieved by the user or shows a Set Date button. A user can click the Set Date button to set the date that a competency was achieved by a user. The Date Required column either shows the date the user is required to achieve the associated competency or a Set Date button, which allows the user to set this date. The Required column either contains the text "Required" or a drop-down.

For entries with the "Required" text, the associated competency is required for this user due to their job position. In other words, the competency is mandatory for this job position. If a drop-down appears for this user, the competency is optional for this user based on their job position. If an administrator chooses to make an optional competency mandatory for this user, the drop-down should be set to a value of Required. Otherwise it can be set to a value of Optional or N/A.

The screenshot shows the 'Competencies' management interface in LearnFlex. At the top, there is a navigation bar with 'Settings', 'Users', 'Courses', 'Registration', 'Messages', and 'Reports'. The main content area is titled 'Competencies' and includes a 'Job Position' dropdown set to 'Default Job Position Group'. Below this, there are checkboxes for 'Mandatory', 'Optional', and 'Not Applicable'. The core of the interface is a table with the following structure:

Competency	Type	Achieved	Date Required	Required
COMPETENCY OUTCOME TYPE				
> Competency Authority				
Competency Outcome			Set Date	Required by all
Testing Outcome #1			Set Date	Required by all
Testing Outcome #2			Set Date	Required by all
LISTENING SKILLS				
> Competency Authority				
Extreme Knowledge in Listening			Set Date	Required by all

At the bottom right of the table area, there is a 'Next' button. The left sidebar contains a 'User Manager Menu' and various administrative options like 'Basic Information', 'Work Address', 'Home Address', 'Restrictions', etc. The bottom left corner shows 'User: user, operitel' and 'Source: Native'.

Figure 2: Managing User Competencies

Step Seven: Generate reports such as a Skills Inventory, or a Skills Gap Analysis, or send data to a Human Resources Management system.

LearnFlex comes with a set of default reports relating to competencies, and others can be developed using the built-in Report Builder. The Report Builder allows an administrator to specify a data range, and a set of parameters to be used to build and print a report. Alternatively, specified reports can be exported to Microsoft Excel or to an external Human Resources Management System.

Here are descriptions of the default reports in LearnFlex related to competencies:

Competency Report

The competency report returns all users who have achieved a given competency outcome.

Search Criteria:

Start Date	Show competencies achieved on or after this date.
End Date	Show competencies achieved before or on this date.
Competency Authority	The competency authority for the competencies you would like to report on.
Competency Outcome Type	The competency outcome type for the competencies you would like to report on.
Competency Outcome	The competencies that you would like to report on.
Completion Criteria	Describes how the competency was obtained. Values are course, manual entry, pre-assessment, and test.

Individual User Competency Report

Search Results:

User's Name	Search results are indexed by user name.
Business Unit	The business unit the user is in.
Competency Outcome Type	The competency type for the displayed competency outcome.
Competency Outcome	The achieved competency.
First Date Achieved	The date the competency was first achieved in the system.
Last Date Achieved	The most recent date the competency was achieved.

Required Competencies Report

The required competencies report returns information about required competencies and the users who require them.

Search Criteria:

Start Date	Start date for report (see Date Range Applies To).
End Date	End date for report (see Date Range Applies To).
Date Range Applies to	All, Date Achieved, Date Required. Use this switch to vary the functionality of the report.
Competency Authority	The competency authority for the desired competency outcome.
Competency Outcomes Type	The competency type for the desired competency outcome.
Competency Outcome(s)	The actual competency outcome(s) to report on.
Job Position	The user's job position within the organization.
User Status	The user enrolment status you would like to report on.

Individual User Required Competencies

Search Results:

Competency Outcome	Search results are indexed by competency outcome.
Job Position	The job position of the user.
Users Names	The users who have achieved or require the selected competency outcomes.
Date Achieved	The date achieved for the competency outcome (if applicable).
Date Required	The date required for the competency outcome (if applicable).
Location	The location of the user.
Language	The user's profile language.

Global Settings Report

The global settings report provides information on the user defined properties of the system.

Search Criteria:

Display	The criteria to report on. Possible values are cohort types, cohorts, grade settings, target catalogue, curriculum group codes, subject areas, methods of instruction, renewal cycles, publishers, competency authorities, competency outcome types, competency outcomes, community types, job benefits, locations, curriculum orientations, delivery providers, regions, business units or job positions.
Status	Status of the property to display. Possible values are All, Active, and Deleted.
Language	One of the deployed languages available in the system.

LearnFlex is a highly adaptable learning management system, and this is reflected in the ways it can personalize the setting up of a competency model for any organization. Once the competency model has been defined, entering individual competencies according to the model is very intuitive. After competencies have been entered, they can be easily updated and personalized for individual users. After the system has been running for a period of time, a wide variety of competency reports can be generated.

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