I INTRODUCTION

1.1 Background

Job Placement and Career Development Center (JPCDC) is an Information Center that provides graduates with access to the most current resources, educational technology and professional advice to support graduates career development needs. It is also to increase job market accessibility, communication, cooperation and technology transfer between the university and company in human development process, and to support curriculum development process in study program through conducting a systematic training need analysis, which conform to the market demand and technology development. To give the best facilitation for helping students or alumni to get jobs and evaluate their performance based on their skills, aptitudes and attitudes, JPCDC should look forward external changing which influence labor markets, including trend in market demand and level of job qualification. The effectiveness of JPCDC depends on how to keep relevance of educational process in line with business fluctuation and technological change. The statements of vision, mission, and strategic plan of JPCDC have strong cohesion with University vision, mission, and strategic plan. Vision and mission formulations are also based on environmental and national condition, as well as University strengths and weaknesses. Technological changes, globalization and information era, unemployment rate, Indonesia Human Development Index, and life long learning implementation are strategic issues that are used as the main guidance to determine vision and mission of the Center. The vision and mission must be adjusted with the internal strengths and weaknesses such as IT Specialist Availability and IT Affordability and distribution and mobility of graduates The JPCDC vision is to be a leading and excellent center in the country by applying information technology in the job placement, career development, and life long education. The mission of JPCDC is facilitated through the development of high quality partnerships, continuous improvement and a commitment to the principles of life long learning and social justice. In support of the University's strategies, the center is committed to provide innovative and flexible services which assist students in the center planning and skill development to promote the successful transition to employment.
1.2 Problems and Issues

The root of the problem in graduate management is a large number of graduates and their national wide distribution has not been supported by new effective system. The existing of the system is not able to handle the graduate because of several factors. First, there are inadequate capacities of the existing conventional system, such as poor office facility of alumni unit, maximum workload of their staffs, and poor supporting facility for delivering materials in campus. Second, based on graduates’ perception survey, the university has no a feedback mechanism to get in touch with the graduates. On the other hand, graduate seldom spends her or his time to visit the university. And the last, the university has not utilized yet an internet facility for graduate management. According to three functions of ISS as well as position and role JPCDC, JPCDC will deliver several of services for graduates/ student and employer such an Executive Recruiting, Management of Educational Information System and Course Mapping Relation Career Path.

1.3 Objectives

To overcome the above mentioned problem, especially to improve a skilled and qualified staff who provide effective and efficient service to the JPCDC’s clientele, Gunadarma University through Technological and Professional Skill Development Project (TPSDP-ADB Loan no. 1792 INO), sends some staff members to participate in a training and study visit at University of Bourgogne, Dijon - France. Through participating in that program, the participants will increase the capability to design and develop job placement services besides increasing communication, cooperation and technology transfer between the university and company in human development process. The participant will also be able to evaluate such model and encourage developing our own solution which we can implement at Gunadarma University.

II  Job Placement Career and Development Center

2.1 Background

The JPCDC should look forward external change which influences labor markets, including trend in market demand and level of job qualification. The effectiveness of JPCDC depends on how to keep relevance of educational process in line with business fluctuation and technological change. Several strategic issues should be considered. First, science and
technology as well as business fluctuation and social factors, change rapidly. Second, era of information and globalization will affect labor market so job seekers will be more mobile. Third is unemployment rate in Indonesia. Fourth, concept of life long learning requires a medium of communication. And the last strategic issue, autonomy will increase graduates’ workplace distribution and varieties in national wide.

2.2 Objective and Strategy

It is our goal that every student could find employment after his or her graduation. Whenever possible, JPCDC will try the best to help students to get jobs and evaluate their performance based on their skills, aptitudes and attitudes. Students will be gainfully employed within or outside the company when there is vacancy. Prospective employers will provide the center with the criteria in what they are looking for and supporting unit will arrange a meeting between the employer and a graduate that best meets their criteria. As a matter of fact, the center has placed a lot of students and they are so happy with their jobs. The objectives of JPCDC are:

1. To provide graduates with access to the most current resources, educational technology and professional advice to support graduates’ career development needs
2. To increase job market accessibility through life long learning process and help graduates to understand their personality, potentials and career interest, as well as to assist them to plan a strategy for job hunting or entering job market
3. To increase communication, cooperation and technology transfer between the university and company in human development process
4. To support curriculum development process in study program through conducting a systematic training need analysis, which conform to the market demand and technological development.

The series of steps to achieve the target above are formulated in the following strategic plan. They are:

1. Strengthening and improving on-campus recruitment job placement services
2. Developing graduate community and functioning as information media and IPTEK through internet technological implementation.
3. Establishing electronic life-long learning process and electronic job matching
4. Establishing interactive communication system to realizing link and match between employer and university in the human resource management

5. Developing systematic training need analysis to support curriculum development process in study program.

JPCDC strategic Plan is related to University Objective, especially to produce graduates who understand and are able to use technology in industrial practice and organizational situation, as well as become carrier, producer, and disseminator of knowledge. The success of the four strategic implementations is basically the success in achieving the four objectives determined.

III Course Content Materials

3.1 Executive Recruiting

Good management is essential to the health and welfare of all companies, excellent management is the key to success in today's highly competitive environment. The services of outside professionals are utilized by prudent companies for high-level legal, accounting and other special needs. Executive recruiters should be viewed in the same light: as skilled specialists who can identify the best executive to fill an important position on the management team. Although executive search can be performed by in-house human resource departments, employing the services of an executive search firm is ultimately more expedient, efficient and effective. Executive recruiters provide strict confidentiality, an extensive network of contacts, objectivity in candidate evaluation, and negotiation experience and expertise.

Executive recruiters observe strict confidentiality

Organizations with an opening in their executive ranks are vulnerable. Whether for an existing position to be filled, or a position newly created by downsizing or market opportunity, the hiring process must be strictly confidential. Confidentiality can keep competitors from being tipped off to management shake-ups, new product and market initiatives, and can protect against employee, stockholder, and supplier apprehension. Search consultants value the highly sensitive information they become privy to during the search process. They are acutely aware and respectful of their client's vulnerability.

Executive recruiters can tap into a global network of contacts
Top notch executive talent is a scarce commodity today. The limited contacts of in-house human resource departments can't compare with the wide net cast by a recruiter's network. (A transnational search especially calls for the capabilities of transnational search firms). The best candidates are already employed; many will deal only with a recruiter. They appreciate the worth of third party representation, confidentiality and professional mediation. Recruiting superior candidates is intricate and best performed by a discreet professional.

Executive recruiters bring objectivity and feedback to management

Executive search is a time-consuming, sensitive process. Recruiters can help clients evaluate their expectations, review relevant organization structure and reporting, and define a realistic profile and compensation package for the open position. Search consultants provide objective feedback on the candidates and advice to the client. As experts in research and reference checking, search firms can glean significant information from even reluctant reference-givers.

Executive recruiters are cost effective

The benefit of using an executive search firm can be weighed against the cost of preparing and executing an advertisement/recruitment campaign, screening and qualifying candidates, operating without a needed employee for an extended length of time, compared to the relative insurance of getting the right person for the job. The use of executive recruiters is an investment in improving the quality of managerial might. But even beyond that, the risk to not use executive recruiters is too great. For smaller companies - in which one hiring mistake can have disastrous results - using executive recruiters is sometimes more important than for corporate giants. Hiring an incompetent employee who makes bad decisions can cost a company large sum of money - or its very existence. More than ever before, executive talent is at a premium and can make or break the fortunes of a business. Professional executive recruiters can deliver the best.

How Does a Firm Perform a Search?

Once an executive search firm has been selected, the multi-step process of professional executive recruiting begins. Each step is managed by the search firm in partnership with the client team; successful results require diligence during each phase of the process. The key stages of executive search are:
• evaluation of the employment need
• candidate screening and reference checking
• candidate "short list" identification
• interviews
• negotiations
• hiring

The search begins with extensive evaluation of the client need. The search firm works closely with the client to arrive at a thorough understanding of the company, its culture and organization, and the specifications of the position to be filled. Job specifications include title, department definition, reporting structure, and details of compensation. Once prepared, a draft of the position description is submitted in writing to the client team for approval. It is imperative that the job description reflect a clear understanding and agreement between the client and search consultant before proceeding. When the job description is finalized, the intensive research phase of the search commences. The search firm engages in extensive industry research and networking; existing sources are contacted, leads are vigorously pursued. If the client wishes, an internal search of the client company can be performed to identify company employees suitable for possible promotion.

Based on research well underway, the search firm contacts prospective candidates by telephone and begins screening interested and promising candidates. Personal interviews ensue in parallel with thorough reference checking activities.

Good recruiters regularly report their progress and, at some agreed-upon point, present a strong candidate pool to the client. Recruiters sometimes recommend the best candidate(s), though the client and recruiter often arrive at an initial selection of the most promising candidates. Client interviews are arranged with the best two or three prospects. The search firm prepares the client to meet the candidates and may or may not attend the interviews.

After the successful candidate has agreed to accept the position - and when candidate and client have agreed to acceptable terms - the dynamic aspect of the search effort is complete. Most search firms "guarantee" their executive candidates for 60 days (contingency firms) to a year or more (retainer firms). The firm will replace such an executive should he or she leave the client company for any reason. Often these replacement searches are free or at a greatly
reduced price. Though a sensitive topic, clients need to have a clear understanding of the search firm's replacement policy, and all fees associated with such searches. The search firm stays in touch after the new hire comes on board to help smooth the transition and assure client satisfaction.

Recruitment and hiring is a complex process - one that may involve situations and issues that do not lend themselves to easy answers that fit into a "recipe book" manual. When dealing with particular recruitment or hiring situations, we should seek the assistance of the offices listed. As a supervisor charged with making decisions about hiring, the responsibilities are:

1. To interview and select applicants in accordance with the policy and legal requirements within the purview of federal and state legislation.
2. To maintain adequate records of the steps we take in the hiring process.

**Preparing and Conducting the Job Interview**

Chances may be feeling constrained by what not to ask in an interview. The following takes a positive approach and looks at what we should ask in order to select the best possible candidate. Just as a job candidate prepares for an interview, so must the interviewer. A selection interview should be as structured as possible, yet tailored to each applicant. As an interviewer, we should evaluate the same general criteria for each applicant. A selection interview that follows a general standard outline will produce more reliable and valuable information than an unstructured interview, and is less likely to run afoul of laws governing the selection process.

**Preparing for the Interview**

1. **Review the Position Description (PD).** We need to learn as much as possible about the requirements of the job to be filled - the specific demands of the work, salary level, and the working conditions - in order to elicit relevant information. Valuable information about the job can be obtained in an exit interview with the person who is leaving.
2. **Identify the specific knowledge, skills, and abilities to perform the tasks.** Based on the previous employee's performance, what qualifications were essential to success on the job? What did unsuccessful employees lack? How much did successful employees learn and develop while on the job?
3. **Write out our questions to make sure they are clear and comprehensive.**
Review each candidate's resume and application and note areas to explore. This should be done ahead of time so that this information will not have to be referred to continually during the interview. Interviewers sometimes make the mistake of interviewing from an application form. This type of interviewing simply duplicates what is already a matter of record.

Based on these considerations, we should generate a list of questions structured around these headings:

**Behavioral questions**: These are questions that seek demonstrated examples of past behavior as the best predictor of future performance in similar circumstances. Questions are structured, open-ended, and designed to determine desired competencies.

**Job knowledge questions**: These questions assess job knowledge that is essential to job performance and must be known before starting the job. They often concern the technical aspects of the job or basic knowledge that is necessary to learn the job.

**Job sample/simulation questions**: It may be possible to have the applicant actually perform a sample task of the job as long as it is required of all interviewed candidates.

**Worker requirement questions**: These usually take the form of "willingness" questions such as whether the applicant is willing to work under various conditions, to do repetitive work, or to travel.

**Conducting the Interview**

1. Establish rapport. If the applicant is apprehensive, it may be difficult to obtain useful information. The interview setting should be conducive to good communication. Ideally, we should use a private office. We should be able to talk in a conversational tone of voice and give the applicant our undivided attention. Forward our calls to voicemail to avoid interruption. Make the applicant feel at ease. The emotional climate the interview creates will be even more important than the physical environment. The first role is that of host. A warm greeting and a suitable introduction will help establish rapport and create a pleasant atmosphere. Following the greeting, some small talk is usually valued. It relaxes the interviewer and the applicant and helps establish mutual confidence. A friendly exchange of comments creates an atmosphere that allows conversation to develop more freely and rapidly.
2 Explain purpose. Set the agenda. This will help relax the applicant by letting him or her know what is about to happen. Also, it puts us in control of the interview by providing a road map.

3 Gather information. The comments, questions, and careful listening are the keys to controlling the interview. A common error of interviewers is that they concentrate on the next question they plan to ask, and don't hear what the applicant is saying. If we listen closely, we will be in a better position to ask follow-up questions that probe deeper into a candidate's qualifications than we might otherwise. If we talk as much as 50% of the time, we're dominating the interview. Our job is to listen and evaluate. Many interviewers fail to recognize the value of comments and concentrate exclusively on questions, causing the interview to resemble an interrogation. By only asking questions, we are making the task harder. We are conditioning the applicant to answer questions rather than encouraging spontaneous talk about things that might be important. Avoid asking questions that require a "yes" or "no" answer. Instead, ask open-ended questions that encourage the applicant to express ideas and information and allow more freedom in response. For example, if we ask, "Did you like that job?" we might receive a yes or no as an answer. However, if we ask "What things did you like most about the job?" we may receive several responses that will contribute to our understanding of the applicant's motivation and interest. It will help to write some questions in advance. Words like "why," "how," "what," "describe," and "tell me about," will yield more complete answers than leading questions such as "Do you like to work with people?" The question "What type of work do you enjoy?" will yield more information than "Do you like to work outdoors?" Avoid the use of leading questions. This tempts the applicant to slant answers to suit us. The purpose in the interview is to obtain a clear, balanced picture of the applicant's qualifications without revealing the responses we hope to hear.

Note-taking can be helpful, especially if we have several interviews scheduled. It helps ensure accuracy and demonstrates to the applicant that we are interested in him or her as an individual. Be sure to explain in advance what we're doing and why. One favored method is holding a clipboard in our lap instead of taking notes at the desk. Keywords or phrases can be jotted down. Try to maintain eye contact while taking notes and be sensitive that writing down responses may create tension for some interviewees.

4 Describe the job and the organization. A detailed description of specific duties should generally be saved until the latter stage of the interview. By describing the job in detail
before this stage, we may be inadvertently coaching the applicant on how he or she should appear and how to look as good as possible.

An interview is a two-way process. There are things the applicant needs to know from us about the position and the organization. Provide sufficient facts, favorable and unfavorable, about the position, our department, and promotional opportunities in a direct manner so the applicant can intelligently choose whether the position is acceptable.

5 Answer questions and allow the applicant to add information. This stage is directed toward the applicant's objectives - to gather information about the job and institution and to sell him or herself. We should provide the opportunity to accomplish both.

6 Conclude the interview. Simply thanking the applicant for his or her time and outlining what will happen next is an honest and comfortable way to end the interview. Give the applicant an approximate date by which we'll make our decision.

7 After the interview be sure that all opinions, evaluations, and additional information are recorded immediately.

8 References. Since letters of recommendation often lack candid and specific assessments of work performance, we advise that we talk directly with previous supervisors. Such conversations allow us to raise questions and gain information that is not commonly included in letters of recommendation. Inform the candidate that we plan to do this.


Negotiation Is The Art Of Reaching An Agreement

Mutual understanding is a necessary precondition to reaching an agreement. Preparation is the best path to mutual understanding. Preparation includes much more than analysis of each party's interests. Preparation includes analysis, perception, prioritization, anticipation, and development of objective criteria as well as options for mutual gain. Analysis often is the simplest part. The analysis should identify the relevant legal and business issues. Perception means that we "walk a mile in our shoes." Our view of the relevant issues will not be the same as other’s view because the issues will "pinch" us at different points than the issues pinch them. The emotional component of our perception must not be overlooked. Prioritization is an understanding of the relative value of each issue. Know ours and know theirs. Value is time sensitive: "One who gives quickly gives twice". Anticipation is necessary to hear opportunity knocking and is necessary to avoid poisoning the well. Most certainly we will miss a golden opportunity or we will react caustically to statement born of frustration unless we anticipate both our reactions and the opponent's reactions to the topics and the sequencing of topics. Kindness at a critical juncture establishes the trust upon which the agreement is built.
Objective Criteria is the building blocks of the agreement. Objective criteria allow the discussion to progress. Avoid a focus on positions (e.g., the patent is worth millions.) or on persons (e.g., you stole my idea!), focus on the parties' interests and the criteria for analysis and outcome. Options for Mutual Gain are the cement of the agreement. Build the opponent a golden bridge to retreat across. When we both have a problem, a solution is not a zero sum game. Be creative. *This is the most difficult task.*

3.2 Management of Educational Information System

*Introduction*

What is known about human learning relevant for the design of educational material? How should this knowledge be used in the context of more specific educational goals and WWW-supported learning & teaching activities? Generally speaking there are two important statements about learning and instruction:

1. One learns by doing something (psychology)
2. One learns by pursuing an instructional goal (education sciences)

The learning environment designer must take into account both perspectives. WWW-based courseware must not restrict itself to delivery of educational content. It must be grounded in some model of instruction and learning. Many possibilities exist and haven proven to be effective. However, each paradigm works under certain conditions in certain situations using some set of specific educational technology. For example, it can easily be argued that a good book is better than hypertext version of that book (why do people always print out things?). Also, general rules can be formulated such as "learning without doing is pretty useless in most domains". Consider the following questions:

1. Would you take the plane if you knew that the pilot has read all the documentation about flying and successfully passed examination testing his knowledge?
2. Would you take a plane if you knew that the pilot has been trained with Microsoft flight simulator? Which one do trust better?
3. Would you take an Airbus if you knew that the pilot has been trained on a B-737 and has read the WWW multimedia Airbus documentation?
4. If you had to teach flying an Airbus, would you take a would-be pilot and show him how to fly "hands-on"?
Some basic misconceptions about learning have to avoided: Reading or seeing does not imply much learning. Even being able to recall knowledge does not mean being able to apply knowledge. Efficiency is not measured by mastery of the exercises and tests of a courseware tool, but my mastery of the task. Also be aware of more subtle knowledge transfer problems: Even "micro"-competencies such as operating an Airbus vs. a Boeing or programming in C instead of Pascal are difficult to teach. If more abstract things like "programming" instead of just C programming have to be learned, special teaching strategies have to be used (such exercising skills in variating contexts. Lastly, the complexity of a learning environment must be adapted to the learners skills (Would you teach C as an introductory programming language)?

Some Learning Theory Background

In a behaviorist view, "Learning" can be defined as something that occurs when a learner acquires the capacity to do something. The LE designer must provide the conditions for this process. For each type of learning, some conditions work best and some don't. Let's look at 2 classifications:

Types of Learning
(according to Kearsley 1993):

- Attitudes: "....Disposition or tendency to respond positively or negatively towards a certain thing (idea, object, person, situation)." Also: Choose to behave this or that way according to opinions and beliefs.
- Factual Information (Memorization): Processing of factual information and remembering is tied to previous knowledge. Memory research has also a lot to say about processing constraints.
- Concepts (Discrimination): Concept learning encompasses learning how to discriminate and categorize things (with critical attributes). It also involves recall of instances, integration of new examples and sub-categorization. Concept formation is not related to simple recall, it must be constructed.
- Reasoning (Inference, Deduction): "Reasoning encompasses all thinking activities that involve making or testing inferences. This includes inductive reasoning (i.e., concept formation) and deductive reasoning (i.e., logical argument). Reasoning is also closely related to problem-solving and creative behaviors".
- **Procedure Learning:** Procedures refer to being able to solve a certain task by applying a procedure. Once a procedure is mastered, its excution usually does not take much effort (e.g., ftp a file). Cognitive theories like ACT or SOAR are interested in this, because procedures are important in diminishing cognitive load.

- **Problem-Solving:** A good example is Newell & Simon's information processing paradigm for the study of problem-solving and the concepts of "means-ends-analysis" and "problem space". According to their GPS framework, problem-solving involves the identification of subgoals and the use of methods (especially heuristics) to satisfy the subgoals. An important contribution was also the methodology of protocol analysis (of "thinking aloud methods" which has been extensively used by Anderson (87) to implement intelligent tutoring systems according to his ACT* theory (Anderson 83).

- **Learning Strategies:** can be learned to some extent. Very much dependant on what you want to learn

- **Sensory-Motor**

Note that learning types can be strongly related to different kinds of cognitive task behaviors (that are being used while learning or that are targets for learning). As an example, Kearsley (93) lists the following types of task behaviors:

- Searching for/receiving information (detects, observes, inspects, identifies, reads, surveys)
- Processing information (categorizes, calculates, codes, itemizes, tabulates, translates)
- Problem-solving (analyzes, formulates, estimates, plans)
- Decision-making (examines, chooses, compares, evaluates)
- Communication (advises, answers, directs, informs, instructs, requests, transmits)
- Sensory-motor processes (activates, adjusts, connects, regulates, tracks)

By combining those two kinds of typologies one can imagine the "haystack" Instructional Design theory is faced with when trying to operationalize how to learn what.

Other categories of learning types have been proposed such as the ones by Gagné (Aronson 83:81, Gagné 87: 64), i.e. (1) Intellectual Skill, (2) Verbal Information, (3) Cognitive Strategy (problem solving), (4) Attitude, (5) Motor Skill. In any case, it think it is useful in this context to distinguish at least the following basic categories:
1. Factual Information & Concepts (Verbal Information): Remember and discriminate things
2. Problem Solving & Reasoning (Cognitive Strategy): Apply general or domain-specific heuristics to problem situations
3. Procedural skills: Learn how to do simple or complex tasks more or less automatically.

**Learning/Teaching Strategies & Principles**

How can we have the learner use an appropriate learning strategy? In some learning environments (specially the fully computer-based ones) learning and teaching strategies are integrated into its design. In others they are delivered apart. Principles and Strategies vary according to the type of learning and different theoretical orientations.

Bruner (66), inspired by Piaget, focussed on how people construct new knowledge. His constructivist approach (discovery methods and intellectual stages) still inspires current theories.

1. Instruction must be concerned with the experiences and contexts that make the student willing and able to learn (readiness).
2. Instruction must be structured so that it can be easily grasped by the student (spiral organization of the curriculum).
3. Instruction should be designed to facilitate extrapolation and or fill in the gaps (going beyond the information given).

An other early contribution was Ausubel's (63) subsumption theory concerned with how individuals learn large amounts of meaningful material from verbal/textual presentations in a school setting (as opposed to rote or discovery learning). He initiated that instructional sequences should make content more meaningful for the learner. He postulates (cf. Kearsley 93, Reigeluth 83:339) that:

- Instruction (of verbal information) should start with general knowledge that subsumes content presented by successive differentiation, i.e.the most general and ideas of a subject should be presented first and then progressively differentiated in terms of detail and specificity.
More generally, instructional materials should attempt to integrate new material with previously presented information through comparisons and cross-referencing of new and old ideas.

Both Reigluth's (83) "Elaboration Theory" and Merrill's (83) "Component Display Theory" are based on work by Bruner and Ausubel.

Other more recent lines of research combine cognitivist information theory with results from more traditional experimental memory research.

An example is the Act* Theory using Intelligent Tutors as a test bed (cf. Anderson 87). "According to ACT*, all knowledge begins as declarative information; procedural knowledge is learned by making inferences from already existing factual knowledge. ACT* involves three types of learning: generalization, in which productions become broader in their range of application, discrimination, in which productions become narrower in their range of application, and strengthening, in which some productions are applied more often. New productions are formed by the conjunction or disjunction of existing productions. It is interesting to compare these three types of learning with the three modes of learning (accretion, restructuring, tuning) proposed by Rumelhart & Norman (.)" (Kearsley: 93).

Principles:

1. Identify the goal structure of the problem space to the learner.
2. Provide instruction in the context of the problem-solving task.
3. Provide immediate feedback on errors.
4. Minimize the working memory load.
5. Adjust the "grain size" of instruction to account for the knowledge compilation process.
6. Enable the student to approach the target skill by successive approximation.

With partially automatized environments such as Hypertext course on the Web, the student should be told how to use the material, how to read it and what to do beside.

"A typical study skill program is SQ3R [applicable to concept learning/D.S] which suggests 5 steps: (1) survey the material to be learned, (2) develop questions about the
material, (3) read the material, (4) recall the key ideas, and (5) review the material." (Kearsley: 93).

Summary

Learning appears to be a complex matter. No doubt that this is the reason why all the various branches of learning theory do not even view the problem from a same angle. However, all academic traditions do provide the learning environment designer with important key ideas:

1. Learning must take place within optional external "conditioning" (behaviorism)
2. Learning is related to active problem solving and involves integration, construction and compilation of new content (cognitivism)
3. Learning is constrained by human cognitive capacities (experimental psychology, HCI theory)

How is courseware related to instruction?

Courseware engineering is concerned with electronic learning environments. Such an environment is a combined system involving tasks, agents, courseware products, etc. which is aimed at supporting learning processes and in which learning takes place mostly in interaction between learners, courseware products, other tools, and to a lesser degree tutors (human or artificial). Courseware is always a combination of elements (cf. de Dinan & van Shaik 93: 193), such as:

- textual material (including textual representations)
- simulation models,
- exercises
- problems
- feedback information, etc.

Each type of courseware architecture organizes those resources in various ways. How complete are the materials supplied to the learner with respect to the information and support needed by the learner to achieve an instructional goal? Several ways of tackling this problem have been proposed.
We shall briefly introduce some ideas from (1) Instructional Design and from (2) Advanced Learning Environment Research.

**Instructional Design Theory: Sequencing & Chunking of Educational Material**

**Gagné's steps of instruction**

What is the optimal sequencing of courseware and how is it related to various types of learning? Gagné suggests nine universal steps of instruction (cf. Gagné 85 or Aronson 1983) which should be found in any instructional context:

1. **Gain attention** e.g. present a good problem, a new situation, use a multimedia advertizement.
2. **Describe the goal**: e.g. describe the goal of a lesson (task,...), state what students will be able to accomplish and how they will be able to use the knowledge, give a demonstration if appropriate.
3. **Stimulate recall of prior knowledge** e.g. remind the student of prior knowledge relevant to the current lesson (facts, rules, procedures or skills). Show how knowledge is connected, provide the student with a framework that helps learning and remembering. Tests can be included.
4. **Present the material to be learned** e.g. text, graphics, simulations, figures, pictures, sound, etc. e.g. follow a consistent presentation style, chunking of information (avoid memory overload, recall information)
5. **Provide guidance for learning** e.g. presentation of content is different from instructions on how to learn. Should be simpler and easier that content. Use of different channel.
6. **Elicit performance** "practice", let the learner do something with the newly acquired behavior, practice skills or apply knowledge
7. **Provide informative feedback** show correctness of the trainee's response, analyze learner's behavior (or let him do it), maybe present a good (step-by-step) solution of the problem
8. **Assess performance** test, if the lesson has been learned. also give sometimes general progress information
9. **Enhance retention and transfer** inform the learner about similar problem situations, provide additional practice. Put the learner in a transfer situation. Maybe let the learner review the lesson.
Reigeluth's "Elaboration Theory of Instruction"

Elaboration theory (Reigeluth 83:342) proposes seven major strategy components:

1. an elaborative sequence
2. learning prerequisite sequences
3. summarizers
4. synthesizers
5. analogies
6. cognitive strategy activators
7. a learner control format

The first component is the critical as far as elaboration theory is concerned. The elaborative sequence is defined as a simple to complex sequence in which the information epitomizes (rather than summarize or abstract) the ideas that follows. Epitomizing should be done on the basis of a single type of content (concepts, procedures, principles) and involves the presentation of a few fundamental or representative ideas that can form the basis for the lesson/course.

Merill's Component Display Theory (CDT)

Merrill's CDT is probably still the most detailed theory on how to teach a single idea or concept. It provides at a micro-level what Gagné-Briggs provide at a macro-level. Not surprisingly it is more concerned with cognitive issues than with instructional ones: CDT attempts to indicate what set of methods is most likely to optimize learning under some specified conditions. CDT classifies learning objectives on 2 dimensions:

1. Content
   - facts
   - concepts
   - principles
   - procedures

2. Performance
   - remember
   - use
   - find
Summary

Instructional Design Theory provides detailed prescription on how to organize teaching and learning at the global (curricula), lesson and task level. Most work is also grounded in some learning theory. Despite and maybe also because of the level of details those approaches attempt to formalize instruction their practical use is often debated. Some argument against reading much instructional design theory is that a good teacher with good practice intuitively knows and uses things like Gagné's steps.

Most people agree that instruction needs principles, however some researchers feel that instructional theory should not just be grounded in learning theory but BE applied learning theory and to implement optimal learning conditions according to what we know about learning. This is the way most research in Advanced Learning Systems operates.

Research on Advanced Learning Environments

The important idea in here is the modern advanced learning environments stress much less the "Intelligent Tutoring Aspect, but rather design of a global learning environment taking into account learning (and some instructional) theories, making use of all useful technologies available. Whereas it is not realistic to see the kind of experimental programs we play with in practice, some ideas from our research can be taken and transferred in any kind of learning environment.

One of the main research line here are 'intelligent learning environments' (ILE). An ILE refers to a category of educational software in which the learner is 'put' into a problem solving situation. A learning environment is quite different from traditional courseware based on a sequence of questions, answers and feedback. The best known example of a learning environment is a flight simulator: the learner does not answer questions about how to pilot an aircraft, he learns how to behave like a "real" pilot in a rich flying context. Experience with learning environments (like LOGO) showed that those systems gain efficiency if the learner is not left on his own but receives some assistance. This assistance may be provided by a human tutor or by some system components. In our flight simulator example, the future pilot would gain from discussing his actions with an experienced pilot. The implementation of these agents is based on artificial intelligence techniques in advanced experimental learning environments. In summary, we use the word 'intelligent learning environment' for learning
environments which include (1) a problem solving situation and (2) one or more agents that assist the learner in his task and monitor his learning.

Designing an intelligent learning environment (ILE) involves implementing some theory of learning and teaching. However, most available theories do not have the level of operationality required for implementation work. Designing an ILE is real research work. We are developing an intermediate framework that builds a bridge between theories and implementations by translating psychological knowledge into terminology more relevant to computer scientists. It specifies the cognitive architecture of systems like MEMOLAB. Let's examine two key concepts: the pyramid metaphor and the language shift mechanism.

The "pyramid" metaphor represents the concepts and skills to be acquired by the learner, ranked bottom-up according to their level of "hierarchical integration". Learning consists in moving up in the pyramid. Each level of the pyramid is defined by two languages: the command language and the description language. The command language vocabulary is the set of elementary actions that the learner is allowed to do at some stage of interaction. The command language syntax defines how the learner composes sequences of elementary actions. The description language is the set of symbols (strings, graphics,...) used by the computer to show the learner some description of her behavior. This description reifies some abstract features of the learner's behavior in order to make them explicitly available for metacognitive activities (Collins and Brown, 1988).

The command and description languages are different at each level of the pyramid, but each level integrates its lower neighbor. This integration is encompassed in the relationship between the languages used at successive levels: if a description language at level L is used as a new command language at level L+1, then the learner is compelled to use explicitly the concepts that have been reified at level L. This is what we called the language shift mechanism (Dillenbourg, 1992): when she receives a new command language, the learner must explicitly use the concepts that were implicit in her behavior. The meaning of the new commands has been induced at the previous level by associating the learner's behavior with some representation. This representation is now the new command.

The process by which properties that are implicit at some level of knowledge can be abstracted and explicitly reached at the higher level has been studied under the label of reflected abstraction (Piaget, 1971). The language shift mechanism has two uses. Firstly, it
translates this psychological concept in a terminology more relevant for ILE designers. Secondly, it describes a pedagogical strategy (mainly inductive) to trigger reflected abstraction. By applying the framework to ILE design, we not only ground the structure of learning environments in a model of cognitive development. But such models of development can be tested through the difficult process of implementation. We found that this intermediate framework can be used to "interface" several theoretical backgrounds. Most psychological theories address actually only a specific facet of learning while an ILE designer must consider learning in its globality and complexity. Therefore, an intermediate framework should integrate multiple theoretical bodies of knowledge, each relevant for some aspect of reality. An educational computing system must account for the importance of discovery, for the role of practice and for the effect of coaching, because all of them occur at some stage of learning in the real world. The framework we propose can be read from different theoretical perspectives.

From Campbell and Bickhard's (1986) viewpoint, the language shift mechanism can be viewed as a process of inducing interaction patterns. An elementary interaction associates some sequence of user's actions and the computer's description of this sequence. Inferring the meaning of the description language can indeed be described as the result of inducing the relationship between the actions performed and their representation (Dillenbourg, 1992). This corresponds to a view of knowledge as something that stands in the interaction between the subject and her environment. It creates a bridge between our model and current research on situated learning (Brown, 1990), a "hot" issue in AI and Education.

Our intermediate framework also introduces the designer to the theories of Vygotsky. The apprenticeship idea is reified in the pyramid model by sharing control between the coach and the learner: when the learner is able to perform at some level L, the tutor must guide her activities at level L+1. This level L+1 corresponds to the concept of zone of proximal development (Vygotsky, 1978). At each language shift, the learner will assume a more important control of his solution process and the coach's guidance will be reduced. Moreover, Wertsch (1985) proposed a linguistic analysis of the internalization process that relates it to the language shift. He observed (in mother-child interactions) that the move from the inter-individual to the intra-individual plane was preceded by a language shift inside the inter-individual level: mothers replace a descriptive language by a strategy-oriented language (i.e. a language that refers to objects according to their role in the problem solving strategy).
The third but central theoretical background that fits with our framework is the neo-Piagetian theory of Robbie Case (1985). We focused on this theory because of its rather operational form. The key idea in Case's theory of intellectual activity and development is what he calls the "executive control structure". He believes that problem solving across domains can be viewed as the execution of a "mental plan" defined as a program of schemata. There are two types of schemata: "figurative schemata" represent states and "operative schemata" represent transformations. The mental plan is divided into three main sub-components.

- A representation of the "problem situation": this is the set of conditions relevant to the plan. The complexity of the representation will depend directly on the complexity of the problem.
- The goals to be achieved defined as a set of new states, or "solution situation".
- The "problem solving process" to be used, stated as a set of operations that transform the problem situation into the solution situation.

These components are further analyzed. Elements of the problem situation are mapped to elements in the solution situation, and both are mapped to transformations in the strategy set. The result is a well-defined formal structure associating specific tasks with problem solving processes in a rigorous way.

Case formulates his general theory with reference to developmental stages in specific domains. One of the characteristics of his theory is that it relates quantitative changes within a stage to qualitative changes between stages: for example, an increase in the active unit capacity of working memory occurs within a stage, but helps to explain the transition to the next stage. Case distinguishes activity within a stage (i.e. a "sub-stage") by first defining what he calls "basic units of thought". He then notes that during development (and probably also during skill acquisition) we have the classical four stages:

- Perception of objects and motor activities
- Relations between motor activities
- Manipulation of dimensions (quantifiable variables)
- Second order dimensions (ratios)
How do we explain the formation of new units and the transition between stages? According to Case, each new sub-stage within a stage is characterized by the subordination of a new basic unit to the executive control structure: the first sub-stage has two basic units, the second has three and the third has four. The complexity of subordination reached at the final sub-stage (in stage n) is such that it corresponds to a basic unit at the next stage (stage n+1). When the executive control structure of stage n+1 subordinates two of these basic units passed up from below, it will enter its own first sub-stage... and so on. The last sub-stage of stage n can thus be considered as sub-stage zero of stage n+1. In other words, the four-unit control structure of stage n can be translated into a one-unit control structure at stage n+1. It is this formal process which Case calls "hierarchical integration".

The increase in "Short Term Storage Space" (STSS) permits the transition from one sub-stage to the next. This increase is achieved within the "Total Processing Space" (TPS) which also contains the "Operating Space" (OS) utilized to control the active schema. STSS increases with age during development as a result of the maturation of the nervous system. It also increases during the learning of schemata as the result of an increase in the efficiency of the control structure: as the learner masters a task, the compilation of her knowledge frees up short term memory to hold new objectives.

There is an obvious mapping between the structure defined by Case and our intermediate framework. The control structures at each level of the pyramid integrate the control structures located at the lower level. The sequence of microworlds within the pyramid is structured as Case's view of development: quantitative variations define the improvement possible within some level (or microworld or stage) while the qualitative variations define the transition between two levels. The concept of stage transition is translated into the language shift mechanism. This transition is necessary when the learner tries to solve problems that have too high memory load constraints. After the language shift, the learner has at her disposal new control structures that enable her to solve the problems with a reduced cognitive load.

The shift from one level to another, i.e. to shift from one language to another corresponds to some qualitative jump in learning. Within each level, we defined four sub-levels that are discriminated by quantitative differences. These differences result form an increase in the difficulty of the challenges proposed by the coach. More complex challenges compel the learner to handle a larger number of dimensions and hence increase the working memory load. At the end of the second sub-level, the learner receives challenges that already belong to
the next level. This shows the learner the necessity to have more powerful control structures
to solve the proposed challenge (As in Case theory sub-level i.4 is equivalent to sub-level
i+1.0). The "reunitarisation" of the objects used at some level in a new more powerful object
frees the memory resources necessary to solve the problem.

Summary

- The Learner must be active
- A learning environment should be designed as powerful dedicated working
  environments. It must be rich and complex reflecting the essential properties of what
  has to be learned.
- The environment must be structured. If the richness of a learning environment is a
  quality, its complexity may reduce learning. It must provide optimal learning
  conditions in function of the learner's stage of knowledge.
- Learning environments should be designed as hierarchical knowledge base generators
- Learning environments should present knowledge as a communication system. A
  learner must interact with agents, tutors.

At the current state of the WWW technology, it is not possible to implement this kind of
advanced learning environment (without making use of external clients). However, there are
points that WWW based courseware can adopt.

What learning activity can we do with the Web?

Here is a (short) list of different kinds of computational learning environments in use. They
represent different learning paradigms and can be classified along several axes like
"Instruction - Learning", "External - Internal Control". Each are still appropriate for certain
kinds of learning.

- Programmed Instruction (little step by step transfer of content)
- Computer Assisted Instruction (Drills & Tutorials)
- Intelligent Computer Assisted Instruction (ITS Tutorials)
- Computer Based Learning (Simulations, Hypertext & Microworlds)
- Intelligent Learning Environments (Microworlds + tutors, helpers, experts)
- Cognitive Learning Support Environments (some hypertexts)
- Knowledge Construction & Environments & Intellectual Toolkits
Now match that to those more technical items:

1. Information servers to look up information (manuals, books, expositions, bibliographies, programs, etc.)
2. Distribute educational material (texts, programs)
3. Provide curricula & guidance to lessons and exercises in hypertext format.
4. Implement collaborative work (dynamic hypertext, "News like conferencing system", co-writing)
5. Implement Jigsaw puzzles
6. Question & Answering, (tests, Skinner & Bloom type of learning to some extent)
7. Interface to local clients (e.g. simulations, programming environments, tutors, etc.)
8. The same thing over the web (e.g. have intelligent nodes, cf. Mallery)
9. ....

The WWW, specially in conjunction with external local or server-side clients offers a lot of possibilities. But not everything can be done and it is important not to use in inappropriate learning paradigm for a given educational goal.

*Educational Hypermedia*

*Integration of Hypermedia*

There are 3 aspects:

1. Integration into a learning environment setup: What role in learning & teaching does hypermedia have? (see also "What learning activity can we do with the Web?" ) What other tools do we need?
2. Integration into a learning environment architecture: How can we make integrate hypermedia with other computational learning tools?
3. Computational integration with other programs: How can we build achieve tight integration?

*Courseware engineering & the learning environment*

In more simple and technical terms, courseware engineering (cf. De Dian & van Schaik 93:193) is concerned with:

- transferring educational information
• organizing pedagogically optimized access to this information via an appropriate interface and structuring of the material

• implementation of instructional tactics, e.g.:
  o giving examples
  o multiple choice questions
  o asking the student to perform a task, etc.
  o telling the student what learning strategy to adopt with some material
  o ....

• implementation of instructional strategies, i.e. sequencing of teaching materials

Furthermore, Courseware engineering is not everything. Courseware alone rarely constitutes the full learning environment. Authors of Instructional Material on the Web should be aware of the following:

• Teaching and learning involves a learning environment. It is not good enough to hypertextify a text or implement form-based tests. Good Web based courseware is more global in design. Not everything must be built into html or server-side scripts, but somehow instructional tactics & strategies as well as learning strategies have to be "put" upon the learner or communicated to the learner. Last, but not least he needs assistance and very often cooperation with other learners.

• Delivery of instructional text (multimedia and hypermedia) has be structured according to some pedagogical & learning strategies. If the learner has to discover everything himself - fine - but tell him so!
So what can we do with the Web?

In discussing the role of technological support in education, Sandberg (94:225) identifies the components of a (technologically rich) learning environment (see "Overview of the Learning Environment"). These components must all be there in order to optimize learning. However, they can be "implemented" in many different ways. Each component has functionalities for which we should insure:

1. **teacher**: His role is provide something between loose guidance & direct instruction. It can be a human agent (present or distant) or an intelligent agent. He provides information from the curriculum to the task level.

2. **monitor**: The Monitor ensures that something is learner. A role taken by either the teacher, the learner (self-control) or by some program.

3. **fellow learners**: Improve the learning process (some research tries to implement artificial ones)

4. **learning material**: Learning material contains what has to be learned in a very broad sense (e.g. knowing what, knowing how). It can be computational in various ways (exploratory hypertext, lesson & task oriented hypertext, simulation software, task solving environments, etc.

5. **External info sources**: All kinds of information which is not directly stored in the learning material (e.g. additional material, handbooks, manuals, etc.)
6. tools: Everything which may help the learning process other then the learning material (e.g. calculators, communication software, etc.)

Bibliography

3.1 Course Mapping Related to Career Path

In this section consist of

- Career Planning Begins with Assessment
- The Academic Planning Career Process
- Related Career Title and Related Major Skills (Computer science, System Informations and Operations Management, Accounting, English, Psychology, Economics)

3.1.1 Career Planning Begins with Assessment

To successfully make the transition from school to adult life and the world of work, adolescents and young adults need guidance and encouragement from caring, supportive adults. The best decisions and choices made by transitioning youth are based on sound information including appropriate assessments that focus on the talents, knowledge, skills, interests, values, and aptitudes of each individual.

For youth service practitioners, Career Planning Begins with Assessment will
- describe the purposes and dynamics of four ways to assess,
- delineate how to select and use assessment tools, both formal and informal,
- provide practical information about many commonly used published assessment and testing instruments,
- describe when and how to seek help or further information about assessments, and
- review legal issues, ethical considerations, and confidentiality as they pertain to assessment and testing.
For administrators and policymakers, Career Planning Begins with Assessment will provide helpful information in developing
• practical and effective policies,
• greater collaboration among programs, and
• interagency assessment systems.

Overall, Career Planning Begins with Assessment in transition planning programs can improve
• the quality of services at the local level,
• strategic planning at state and local levels, and
• results for youth.

3.1.2 The Academic Planning Career Process

The Academic Planning Process will likely include the following areas (not necessarily in this order), although the specific contents and sequence differs for each person.

Continuous Exploration
• Be Persistent! Continually research Major areas of study and career options
• Come to an understanding of your academic purpose and intentions
• Explore a range of academic disciplines, subject areas and methods of learning
• Meet with a Career Services professional, conduct informational interviews, arrange to job shadow, take related courses, get involved with student organizations, pursue some volunteer work, service projects and paid employment related to fields of interest

Evolving Educational Goals
• Begin to make sense of your studies as a whole package, an education
• Explore out-of-classroom learning opportunities such as student organizations, internships, practicum's, service-learning opportunities, paid employment and study abroad
• What do you want to do? What experiences do you want to have? What skills to you want to build before you graduate?
• Regularly modify your goals to adjust to the transformation of your skills, interests and values throughout college

Developing a Major Academic Plan (MAP)
• Use a MAP Worksheet: Develop a sequence of courses and record your educational goals
• Consult with your advisor and other advisors in Major Departments on a regular basis
• Frequently review and update your timeline and educational goals

Planning for the Transition
• Prepare to describe your education as a whole to the larger community
• Resume development is an on-going process that should begin your freshmen year
• Taking what you have learned and apply it in your life and/or career

3.1.3 Related Career Title and Related Major Skills

a. Related Career Title and Related Major Skills COMPUTER SCIENCE

Related Career Titles
Related Major skills

b. Related Career Title and Related Major Skills INFORMATION SYSTEMS & OPERATIONS MANAGEMENT

Related Career Titles
Actuary, Information Systems Developer, Network Administrator/Manager, Analyst/Programmer, On-Line Services Manager, Information Systems Manager, Applications Programmer, Information Technology Manager, Operating Systems Programmer, Auditor, Internet Developer, Operations Manager, Communications Specialist, Internet Marketing Analyst, Operations Researcher, Computer Aided Software, Engineering Specialist, Inventory Control Specialist, PC Support Specialist, Plant Manager, Computer Security Analyst, Inventory Manager, Product Development Manager, Computer Systems Hardware Analyst, Investment Analyst, Product Forecaster/Estimator, Consultant, LAN Manager, CQI Production Manager, Logistics Manager, Production Line Manager, Data Communications Analyst, Management Analyst, Production Scheduler/Planner, Data Security Analyst, Manager/Supervisor, Programmer - Engineering & Scientific, Database Manager/Administrator,

Related Major Skills
Reading comprehension, Math & science skills, Active listening skills, Critical thinking, Giving advice on business or research, Ability to prepare technical reports, Different learning strategies, Research, Design systems, Oral & Written communication skills, Understanding of computer programs, Work independently and on a team, Active learner, Investigating data to solve problems.
c. **Related Career Title and Related Major Skills ACCOUNTING**

**Related Career Titles for Accounting Majors**

**Related Major Skills & Characteristics**
Problem solver, Adapt well to frequent change, Organized, Numerical computation, Analyze and interpret data, Critical thinking, Oral and written communication, Computer literacy, Systemizing skills, Efficient, Work independently or in teams, Logical thinking.

d. **Related Career Title and Related Major Skills ENGLISH**
Many occupations today require a college educated individual who can write and speak well, solve problems, learn new information quickly and work well with others on a team. This means that college graduates use their education in a wide variety of fields, and your future career may relate more to your personal career interests, work values and transferable skills than any specific academic major. However, the following list contains a representative sample of job titles of former graduates with an English major. Use this as an idea list, and remember that it represents some, but certainly not all, of the careers you might consider. Students obtaining employment immediately upon graduation are usually those with the best college records and a willingness to relocate to find a job. Some of these jobs also require education beyond a bachelors' degree.

Related Career Titles for English Majors

Account Executive, Actor/Actress, Editor, Film/Video, Literary Agent, Editor, Magazine, Loan Officer, Administrative Assistant, Editor, News, Lobbyist, Editor, Newspaper, Magazine Writer, Management Trainee, Manuscript Reader, Editor, Publications, Editor, Publications, Market Research, Administrator, Advertising Copywriter, Analyst, Artist, Editor, Writer, Marketing Specialist, Analyst, Editorial Assistant, Education & Training, Marketing Writer, Mass Media, Media Planner, Attorney, Author - Fiction, Non-Fiction, Educational Program Specialist, Medical Records, Assistant Scientific Writer, Bank Officer, Biographer, Book Critic, Entertainment Agent, Fashion Merchandiser, Foreign Correspondent, Narrator, Freelance Writer/Consultant, Novelist, Paralegal, Business Manager, Circulation Assistant, Fundraiser, Greeting Card Writer, Paralegal Assistant, City Manager, College Professor, Hearing Officer, Personnel Manager, Hotel & Motel Manager, Playwright, Columnist/Commentator, Human Resource Specialist, Poet, Politician, Probation and Parole Officer, Human Service Practitioner, Humorist/Comedian, Information Abstractor, Comedy Writer, Communications Manager, Congressional Aide, Product Manager, Program Manager, Proofreader, Insurance Agent, Interior Designer, Property Manager, Public Administrator, Copywriter, Corrective Therapist, Creative Writer, Interpreter & Translator, Investment Counselor/Manager, Public Relations Specialist, Journalist, Critic, Art/Book, Crossword Puzzle, Curator, Customer Service, Labor Relations Specialist, Lawyer, Public Speaker, Publicity Assistant, Desktop Publisher, Legal Assistant, Publisher, Publishing Assistant, Librarian, Director, Radio-TV Commentator, Radio-TV Newscaster, Reading Consultant, Reporter, Sales Representative, Sales/Service Manager, Script Reader, Special Events Coordinator, Speech Writer, Singer/Voice, Sports Writer, Stockbroker, Talent Agent,
Teacher (all levels), ESL Teacher, Research Assistant, Teacher, Social Welfare Examiner, Researcher/Pollster, Social Worker, Retail Sales, Translator, Writer, Documentation Specialist, Underwriter, Technical Consultant, Technical Writer, Training Specialist, Video Scriptwriter/Producer.

**Related Skills**

Influencing and persuading, Clarifying ideas, Problem solving, Presenting alternative viewpoints, Making oral presentations, Comparing interpretations, Developing hypotheses, Summarizing ideas, Thinking independently, Creative writing, Editing skills, Oral and written communication skills.

e. **Related Career Title and Related Major Skills PSYCHOLOGY**

**Related Career Titles for Psychology Majors**

**ENTRY-LEVEL POSITIONS**

Activity Leader, Crisis Intervention Counselor, International Student Advisor, Admissions Evaluator, Customer Service Rep., Job Developer, Advertising Assistant, Customs/Immigration Officer, Junior Market Analyst, Assistant Account Executive, Employment Agency Counselor, Labor Relations Specialist, Food and Beverage Assistant Manager, Community and Social Service Worker, Market Research Analyst, Case Worker, Health Club Assistant Manager, Marketing/Sales Manager, Community Relations Rep, Hospice Coordinator, Media Buyer, Media Planner, Copywriter, Corporate Merchandising Asst., Corrections Officer, Correctional Caseworker, Hotel Event Management Staff, Human Resources Personnel, Mental Health Coordinator, Personnel Assistant, Public Opinion Surveyor, Public Relations Assistant, Personnel Interviewer, Cottage Parent, Recreation Specialist, Statistician Assistant, Probation Officer, Teacher, Sales Representative, Professional Employment Recruiter, Social Service Professional Staff, Technical Writer/Communicator, Program Developer, Wage/Benefits Analyst, Television/Media Research, Youth Corrections Officer.

**ADDITIONAL EDUCATION OR EXPERIENCE REQUIRED**

Account Executive, Crisis Intervention Counselor, International Student Advisor, Art Therapist, Counselor: School, Job Developer, Child Psychologist, Counselor: Vocational,
Junior Market Analyst, Creative Director, College Student Affairs, Labor Relations Specialist, Market Research Analyst, Career Planning Professional, Human Resources Administrator, Marketing/Sales Manager, Community Relations Director, Personnel Manager, Counselor: Alcohol/Drug, Physical Therapist, Music Therapist, Counselor: Career, Training & Development Professional, Sociologist, Psychiatrist, Psychologist, Counselor: Guidance, Occupational Therapist, Financial Advisor, Financial Aid Director, Employee Assistance Director, Media Buyer, Health Educator,

Related Major Skills
Interpersonal Communication (oral and written), Knowledge of Human Development & Behavior, Engage in Ethical Practice, Problem Solving, Decision Making, Able to Observe, Analyze & Interpret Information, Concern for and Sensitivity to Others, Critical and Inferential Thinking, Interviewing Techniques, Good Listener, Insight to Deal Effectively with People, Ability to Resolve or Mediate Conflicts, Able to Promote Healthy Relationships, Understanding of Group Dynamics.

f. Related Career Title and Related Major Skills ECONOMICS

Related Career Titles
Administrator, Treasury Management Specialist, Information Scientist, Transportation Specialist.

**Related Major Skills:**
Reading comprehension, Ability to give advice on business, Critical thinking, Active Listening, Research skills, Different learning strategies, Mathematics & science, Investigative skills, Oral & Written communication, Active learning, Computer literacy, Ability to prepare & write reports.

**IV Field Study**

**4.1 Vision and Mission of Service of Information and Orientation - SIO**

The SIO (Career Center of Burgundy/ Bourgogne University) has four main missions, the welcome of students that arrives to the university of Burgundy, the information of those that projects to enter there, the orientation of those that are there under cursus and help to the insertion of those that get ready to leave it. He/it is present on the campus of Dijon and on the one of the Creusot where exists an antenna enlivened by a permanent staff attached to the service.

*The Transition Of The High School To The University*

The information of the studying futures and their welcome is an axis important of the activity of the SIO. The High school - University link is presented indeed often like a crucial element of the success in the first cycles of the superior teaching: A good orientation founded on knowledge of the reality of formations and their outlets is essential for the incentive of students, one of the major factors of the success to the university.

Actions undertaken in this domain are three types:

- Provide directly to the high school student and his/her/its family information of quality, at a time accessible and reliable:
  - In December, the high school student booklet is sent to every pupil of terminal of the academy, accompanied by other useful documents (information on the File Social Student, prepared by the CROUS, «card of formations of the university) in a titled seeing envelope «Make your choice».
  - The SIO page of site internet of the university permits an entry by profile: The High school student sees to offer itself/themselves applicable and up to date information.
Various documents are distributed to all opportunity to make know the site and services offered (bookmarks, tracts).

- The SIO participates, in support to components of the university, to lounges and forums where the presence of the establishment is judged appropriate.
- Her «Day open doors» constitute the outcome of the action by high school students who are invited in a pressing manner to return itself/themselves of it of the university whose coordination is assured by the SIO (country of display, presentation in the high school student booklet, consignment of the program of the day to all terminal classes).

Make that information provided to pupils in establishments is most reliable possible:
- While working with services of orientation (ONISEPS and resource persons) to permit them an actualization of their data and their knowledge.
- While doing to meet teachers of high schools, privileged source of information of high school students, and teachers of the first cycles of the university for a better reciprocal knowledge on programs and methods of work.

Welcome the new students in particular while organizing the guidance of welcome during enrollments and the guidance of adaptation during the first weeks, in collaboration with directors of survey of first year of every path.

**Orientation And The Reorientation Of Students Of The University**

Staffs of the SIO are at the disposal of students, to every stage of their cursus, to help them to choose an orientation of study pursuit or a reorientation in case of mistake or failure.

- Permanently they can meet counselor’s psychologists for the deepened interviews permit them to make the point on their expertise. They also can, with the documents - consulting, to review options that are offered them to the University of Burgundy or in other establishments. Sessions of formation by choice of postgraduate formations are organized for students of certain path restraint.
- In situation of failure or in difficulty they can inquire about reorientations that are offered them and on their faculties to succeed there. This reorientation can be precocious (in the first weeks of the return) or more belated (but possibilities cut down with time that passes).

**Help To The Professional Insertion**
The SIO doesn't arrange more means allowing him to assure a complete service of help to the use (management of internship, centralization and diffusion of offers of use), assure nevertheless information by enterprises on practicum’s existing in the different paths of formation of the university («Guide of Practicum’s» on site internet).

- He/it provides, in collaboration with the common service of documentation, the world version «in line» of the Compass, irreplaceable information source to inquire about enterprises in view of a practicum or a use.
- He/it organizes and enliven with teachers and professionals of help sessions to the professional insertion of students, mainly at the level of the second cycles.
- He/it presents to students the reality of professions to which they get ready while organizing them «Thursdays of the enterprise» in partnership with the APEC and the MEDEF. During these demonstrations persons responsible of enterprises come to present their professions and to testify their professional courses. Aiming initially to make students know hulls it of the enterprise, these Thursdays evolved to present a panorama of professions by big branch of activity. They have been spread lately to the public sector while approaching them «professions of the security» or Public Function professions.
- He/it encourages the presentation of works on the evolution of the work market (in particular those of the APEC) and on the insertion of students (organization of conferences, holding of a yearly sitting of the CEVU on l ‘insertion of students).
- In the setting of the LMD reform that foresees the introduction in courses of formation of modules of preparation of the student's professional and personal project (PPE), the SIO took the initiative to organize a formation (animate by the association «to find to create») destiny to the voluntary teachers to act as pilot in their UFRS.

His/her/its missions

Information - documentation

- A documentation on formations
  University of Burgundy
  Universities–schools
  In France and abroad

- A documentation on the use
  Professions
Functions
Sectors of activities
Undertaken
Job market

Orientation

- A personalized welcome
- An aid
  - To the physical fitness of the student's personal professional project
  - To the documentary research
- And of orientation advices
- An open service:
  - To students of the university of Burgundy and the other students
  - To pupils of high schools
  - To candidates to the continuing education and the resumption of formation.
37 hours per week.

4.2 SIO Activities

Help to the success

- Link school/university
  - Edition of the high school student booklet
  - Involvement to forums high school students
  - Day Open Doors
  - In project: guidance of link
- A device of support
  - Guidance of welcome
  - Guidance of adaptation
- Recall: a device of accompaniment organized at the level of formation paths.

Help to the professional insertion

- Sessions of formation in search of internship or employment
- Thursdays of the enterprise
  - 3 Thursdays of the enterprise: to theme
  - 1 Thursday «professions of defense and the security»
1 Thursday «professions of the teaching»
1 Thursday «professions of the Public Function» (in cooperation with the IPAG)
1 Thursday «to leave abroad»
Shops to theme (writing of RÉSUMÉ, letter of incentive, preparation to the interview…)

- The Guide of Internship and project of mutualisation with Universities of Besançon and Nancy 2

Methodology of the S.I.O.

*Work of research*
- Bibliographic research
- National and international experiences
- Convention

*Engineering*
- Conception of a device
- Setting up of a pilot group
- Development of tools
- Calendar/ cost
- Formation

*Experimentation*
- Stake in application «to the test»
- Assessment of the experience
- Correction
- Extension

*Transfer*
- Writing of procedures
- Test of transfer, for example toward the UFRS.

*Assessment of the action*
- By ourselves, from quantitative and qualitative indicators,
- By the different actors of the institution.

### 4.3 Physical Facilities of SIO
SIO have some facilities which used to service the student and graduate of Universite du Bourgogne, such as consultation room, file room, computer room, board magazine, etc.
4.4 IT Support of SIO

There are 10 computer unit at Service d'information et d'Orientation department, 8 unit in consulting room and 2 unit in documentation space. The computer used to support service at Service d'information et d'Orientation department. The computer can be used by student to look for required information about career, job, course, training, University or used to running “transference2005” application (this application assist student to recognize potency of themselves)

Configurations of the computer are

**Hardware:**
Processor Pentium 4,
RAM 256,
Harddisk 40 Gbyte,
VGA 64 Mbyte,
Monitor 15”

**Software:**
Operating System Windows XP Sp.2
Microsoft Office.
Browser (Internet Explorer 6)
TransFerence 2005

Network Configuration see figure 3.
Service d’information et d’Orientation department has space for the width of 870 m², consisted of Consulting room and two Documentation room. (Figure 2.) At that room provided with 10 unit of computer connect at network intranet. Documentation room divided to become 8 shares, that is:
A: Containing document about IUT, BTS, complementary formations, formations in alternation, IUP, universities French 1st and 2nd cycle institutes of political studies

B: Containing document about MST, DESS, DRT, MAGISTERES, DEA,

C: Containing document about Schools of engineers, schools of trade and management, specialized Mastereses, schools of engineers agronomists, professional licenses

D: Containing document about University of burgundy, Teaching has distance, convenient life, schools of architecture, artistic and cultural formations, formations decorated medical and social, press

E: Containing document about Study and stock market have the stranger linguistic stays

F: Containing document about Contest of the function public continuing education teaching

G: Containing document about Use and practicums: france and foreign enterprises press use

H: Containing document about Outlets sectors of activity functions
Figure 4. Layout ISO Room
V  Action Plan to JPCDC

There are some actions planned to improve such implementation and should be a good coordination worked with other working unit. Registering on companies through web-sites. Socializing more intensively in general meeting of alumni, circulating brochures, to provide special column that will be utilized by companies to introduce their various product and new technology. Companies which need job seeker quickly through mobile computing. Registration and activities of alumni on website [http://career.gunadarma.ac.id](http://career.gunadarma.ac.id). Based on the number of alumni who have registered compared to total alumni of Gunadarma University, the Gunadarma alumni network generally have not been accommodated through website career center. The increase of alumni network which is noted in this website can be achieved through more intensive socialization activities and by increasing internal coordination with involved working unit.

The other development plan is information dissemination activity concerning to [http://career.gunadarma.ac.id](http://career.gunadarma.ac.id) for alumni who have got jobs, and for companies, association and other external parties by letters, e-mail and brochures; developing electronic system which can adapt to the data of companies which need job seekers with alumni’s data which seek jobs; preparing activities which aim to build a community between alumni; socializing new information technology to alumni; and adding feature to upload career path data of the alumni.

Make learning material which is suitable with the condition of job market development for all alumni who came from any existing faculties, and the continuity of learning material. Some alternatives are socializing e-magazine to students and lecturers during convocation briefing and giving career brochures, asking for inputs from alumni about material or technological development in accordance with the current labor market demand, and asking lecturers to make a contribution of material or article which will be published on e-magazine and e-learning. The activities planned are to develop e-magazine by re-designing aesthetically to look more interesting, uplifting the quality of learning material which is suitable to the need of alumni, and preparing e-magazine management procedure.

JPCDC will invite the stakeholders and the alumni to optimize the quality of the alumni working in their companies. Not all companies want to give information about the numbers of the alumni working in theirs. Hence, the companies that put the job vacancy in Gunadarma University are required to make a kind of memorandum of understanding to give
information about the alumni that will be employed. The companies need to inform the positions or the descriptions of works toward the alumni.

JPCDC plans to improve the socializations and communications to the procedures so that they are eager to register to the web. JPCDC would like to inform the companies on the procedure of recruitment center in Gunadarma University. Whilst for the long run, the alumni are obliged to fill the alumni forms through offline procedures as one of the graduation exam requirements. For the routine activities, JPCDC send the graduation books, questionnaires to get the feedback from alumni and companies.

The dissemination of survey information which covers widely and lack of response of alumni and companies. This activity is helped by alumni in “snowball” by e-mail and mailing list. An electronic tracer study will be established which focuses more on study programs which refers to the previous program. So the result of this study will be used for evaluation material and the material for making decision related to improvement in teaching-learning process.

VI Conclusion

The services for graduates/student and employer such an Executive Recruiting, Management of Educational Information System and Course Mapping Relation Career Path which would be delivered by JPCDC have prepared well yet.

The SIO system has already been established and well performed such as it has expert Human Resources like psychologist, librarian. And it has also the offline computer application which can used to know the talent and ability of the student’s career path, named Transference 2005.

The SIO system has been performed synergy with the University internally and externally, like with the high school institution, company and also with the Bourgogne local government.

The whole effort which already mentioned would not be successfully implemented and realised if there are no well coordination between all elements in institution especially JPCDC.