Meeting Market Demand for Bachelor-level Instructional Designers

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Introduction

One of the largest areas of employment within the field of instructional technology is to work as an instructional designer. Many graduate programs prepare students for work as instructional designers, and there are numerous jobs for instructional designers that require a master's degree. However, in contrast with the large number of master's and doctoral degree programs, there are very few bachelors' programs with significant instructional design training. Nevertheless, there are large numbers of jobs for instructional designers with a bachelor's degree in instructional design. Additionally, many instructional design positions are held by SMEs, writers, software engineers, and others who are capable but uncredentialed in instructional design. Many of these practicing instructional designers do not have the time nor interest in the field to earn a graduate degree. However, they could benefit from a bachelor's level credential in instructional design, or an equivalent certification program.

This discussion paper will address the gap between jobs and credentials in the field, and discuss the 'missing degree' in the field of instructional technology, the bachelor's degree in instructional design, or its equivalent credential. The paper also reviews studies of instructional design practices and proposes a number of courses that might help prepare bachelor-level students for work as instructional designers.

Market Demand for Instructional Designers

Market demand for credentialed instructional designers has been well met in the past by academic programs that provide masters and doctoral degrees. However, current market trends appear to be away from the graduate credential as more and more employers are asking for bachelor's level credentials. Although there are a few bachelors programs that include instructional design courses or coursework in closely related areas, people with bachelor's degrees in 'instructional design' are hard to find. And many of the academic programs that prepare instructional designers have limited course offerings in 'instructional design' itself, focusing on other areas within the larger field of instructional technology.

Survey of the Job Market

In order to provide some perspective of the job market, a small non-scientific review was conducted to help characterize the demand for bachelor's level instructional designers. The review was conducted on the job board 'monster.com.' A search was constructed using the key words 'instructional designer'.   The timestamp for this search was (10/9/2007 7:28 PM). A total of 357 jobs were returned. The first 10 jobs were reviewed, and are presented in the following table.

Monster.com Search

Job Title	Degree	Salary	Misc
Instructional Designer	BS in technical field	$110,000 to $145,000.	SME with ISD knowledge
Instructional Designer / Instructional Technologist	MS in ISD, ET, Ed, Comm, or CS.	$40,000 to $55,000.	ID/IT work experience is preferred.
Interface Designer / Instructional Designer.	BS in Cognitive Psych., HF, ISD, or similar.	$70,000 to $73,000.	
Senior Instructional Designer / Project lead – Multimedia	MS/MA in education, ISD, or similar field	$53,000 to $60,000	
Instructional Designer	BS in computer-related field	$45-$50 per hour	
Senior Instructional Designer	BS related to ISD, knowledge of ISD	Not given	Major corporation
Instructional Designer	BS or equivalent in Ed, ISD, Curriculum, etc	Not given	Major corporation
Instructional Designer	BS in Instructional Design or Training or related field	Not given, says 'competitive'	
Instructional Designer	Three year's Authorware experience	$40,000 to $65,000 plus bonuses	
Instructional Systems Designer and Curriculum Developer	BS or MS, preferably in ID or OD	Salary commensurate with experience	Major corporation

This was a completely random sample, not in any way biased with regard to credentials required for the jobs. Here is a summary of the result of the search:

     6 Jobs for a BS in or related to ID
     1 Job for BS or MS in or related to ID
     2 Jobs for MS in ID related field
     1 Job requiring no degree, only experience

This is not an isolated trend; this brief survey is typical of the current job market for instructional designers. Picking any 10 job listings for 'instructional designer' at random from monster.com on most days will typically yield similar results, a high demand for people with a bachelor's degree in instructional design. The reader is challenged to attempt this independently, and observe the significant market demand for people with a bachelor's in instructional design. The author has run a similar survey many other days on monster.com, always seeing a similar result, over half of the jobs advertised for 'instructional designer' typically require only a bachelor's degree level of credential, and some specify no academic credentials at all, only experience.

Analysis

One surprise from this small sample is that the credential level does not seem to correlate with salary levels, in fact, the salaries for the jobs asking for a BS in instructional design were comparable or even higher than those asking for a graduate degree. Wages seem better correlated with experience than the degree credential. Therefore the reason for the demand for bachelor's degrees in instructional design may not always be for the obvious reason of lowering costs, as might be believed. Additional research might reveal the exact reason for the demand for instructional designers with a bachelor's degree. One possible reason, based on experience in the field, is that employers view work tasks and expected skill levels for instructional designers as consistent with bachelor's level preparation. Additionally, instructional designers are often placed in a team environment with other bachelor's level professionals, thus the expectation may simply be that a bachelor's degree is the appropriate level for an additional team member.

The demand for bachelor's level instructional designers in no way diminishes the value of master's level preparation, as many jobs do require a graduate degree. The point being made is simply that a significant market demand can be readily identified at the bachelor's level of preparation.

Gap Between Academic Programs and Jobs

Given the strong market demand today for bachelor's level instructional designers, one could expect to find many academic programs to prepare students for those jobs. And in fact nearly every major university now teaches some form of instructional technology classes at the master's level, with many offering doctoral degrees. The US Department of Education lists 153 masters degree programs in 'instructional media development,' an area that generally includes some form of instructional design preparation (DoEd Search 1). By comparison they list only 6 bachelor's degree programs in the US (DoEd Search 2) plus two in Puerto Rico. A review of the 'instructional media development' programs listed shows that many are in fact master's degree programs in instructional technology and other closely related fields.

A comparison between bachelor's and master's degree level jobs, and academic degree programs available, shows the significant gap between degrees and jobs. The following chart provides a visualization of this gap, using the survey of jobs above as the basis:

Instructional Media/Technology	US Academic Programs	Instructional Design Jobs
Experience only	--	10%
Bachelors	6	70%
Masters	153	20%

While a more thorough analysis of this gap using a larger data set might not show such dramatic results, there is little doubt that the gap between degrees and jobs identified here is very significant.   This chart shows that the majority of instructional designer jobs identified in the monster.com search require bachelor's degrees while the majority of academic programs identified by the US Dept. of Education provide master's and doctoral degrees. Experience in the field suggests that part of the reason for this gap may be that employers are not very familiar with the field of instructional technology, and are not aware of the lack of bachelor's level academic programs in instructional design. This brings up the question of whether more publicity is needed, more awareness of the field, among employers. But alternatively, one is left to wonder whether the problem is that as a field we simply have not matured yet to the point where bachelor's level preparation for professional work is adequate or even feasible.   Or perhaps this is just an academic policy problem in program design with academia being unaware of the market requirements or not allowed to meet them. Regardless of the reasons for this gap, the market is in fact expecting bachelor's level programs in instructional design.

Based on the author's experience training bachelor's level SMEs to take on instructional design tasks while the SMEs were working on complicated instructional design projects, bachelor's level preparation appears to be feasible for instructional designers. In a recent study the author identified practical skills and knowledge required to help SMEs function as instructional designers (Rowley, 2005). The instructional design skills and knowledge, as well as processes and success factors identified were concrete, practical capabilities, well within the realm of bachelor-level preparation.

Comparison with Other Fields

In order to better understand the gap between degrees and jobs in instructional design, and to identify the potential size of the market for bachelor's degrees in instructional design, a comparative analysis was run for a highly skilled and allied job title, 'computer programmer.' The intent of the comparison was to identify the functional balance between jobs and degrees in an allied field, providing a basis for comparison.

The review was conducted on the job board 'monster.com.' A search was constructed using the key words 'computer programmer.'   The timestamp for this search was (10/30/2007 2:02 PM). This search returned 2,594 jobs for computer programmers, more than 7 times the number of jobs advertised for instructional designers. The first 10 jobs were reviewed.

Here is a summary of the result of the search:

>   2 Jobs for AA in CS or related field
>   3 Jobs for a BS in CS or a related field
>   0 Jobs for MS in CS or a related field
>   5 Jobs specifying no degree but requiring experience comparable with a BSCS

As none of the jobs required a master's degree, another 10 jobs were reviewed, to see if this was a significant finding. The review of the next 10 jobs produced two jobs requiring either a bachelor's or master's in computer science, with the rest requiring a bachelor's or experience consistent with a bachelor's degree. Therefore, the vast majority of the jobs for computer programmers required only a bachelor's level of credential or

equivalent experience, with a small number accepting a master's degree as an alternative credential.

Next, the number of academic programs in computer science was identified, based on Department of Education data, which revealed 637 bachelor-level programs in computer science, and 184 graduate programs. So the majority of degree programs match the bachelor-level job market in the field of computer science, for the job title 'computer programmer.' In contrast, in the field of instructional technology there appears to be little correlation between the number of jobs for instructional designers requiring bachelor's degrees and number of undergraduate programs in instructional design.

Analysis

There is at least 7 times the number of jobs for 'computer programmer' as for 'instructional designer' in the small unscientific sample used in this paper. Given that there are 637 bachelor's programs in computer science or closely related areas, one would expect to see at least 637 / 7, or *91 bachelors programs* in instructional design, if the jobs and academic programs are comparable and if they both represent real market needs. If typical bachelor degree programs in instructional design tended to teach fewer students than bachelor programs in computer science, there might be a market for even more undergraduate programs (to produce enough graduates to fill available jobs).

A more thorough analysis might temper these very preliminary findings. However, the above provides at least some evidence that there is a significant demand for bachelor's programs in instructional design, or equivalent certification programs for entry level designers, SMEs, software professionals, and others.

Practical Instructional Design Skill and Knowledge Requirements

Employers generally expect practical skills of new hires with an undergraduate degree. Thus, most job openings for people with undergraduate degrees in instructional design are likely searches for people with practical training in the instructional design and development cycle. These positions should require less knowledge of theory and research into instructional technology than positions for people with graduate degrees in the field. The author's experience conducting and managing instructional design projects confirms this point; the market demand for entry level instructional designers is for designers with practical training and many times for designers with technical computer, graphical or writing skills.

Studies of ID Skills and Knowledge

In order to identify the type of undergraduate program in instructional design that would best serve the market need identified in this paper, consider the skill and knowledge requirements of instructional designers in practice. The study of the skills and knowledge required in the practice of instructional design is a fairly recent field of inquiry. In an analysis of this literature, Kenny et al (2005) reviewed ten studies of instructional design activities and determined that instructional designers do not rigidly follow models of instructional design, in fact in addition to skills associated with standard ADDIE type ID processes, they engage in a wide variety of tasks not included in most design models.

The non-traditional skills identified in the ten studies included communication, editing and proof-reading, marketing, media development and graphic design, project management, research, supervision of personnel, teaching, team building, collaboration, and technical skills such as programming.

The author's recent study of military courseware designers (Rowley, 2005), supports this broader view of instructional design skills required for practical application. Practicing instructional designers were identified as opportunistic, applying major instructional design tasks as needed and following a cyclical, prototype-driven design process. This multi-stage study of 25 expert instructional designers also identified major design skills and knowledge, as illustrated in the following table.

Designer Skills and Knowledge Table

Component	Major Elements of the Component
Skills related to design	Conducting Interviews Running meetings Researching literature and writing literature reviews Organizing knowledge Developing and administering surveys Writing instructional text Qualitative data analysis (from interviews or observations) Brainstorming for presentation ideas and facilitating brainstorming Organization of design data Role playing Storyboarding Flow-charting Conducting Evaluations Writing instructions for developers Revision management Writing reports and documentation Task management
Knowledge useful in design	Target Subject Areas (ability to rapidly absorb subject materials) Instructional strategies (CBT, case study, activity, lesson, media, etc.) Instructional and Learning Variables *(situatedness, motivation, transfer)* Instructional Writing Strategy Knowledge Design Knowledge Media Knowledge Experience with teaching and learning Common Design Document Templates Learning Model Knowledge *(affective, cognitive, psycho-motor, etc.)* Learning Process Knowledge *(understanding this is critical)* Designing Instruction for Transfer *(situated contexts for performance, etc.)* Knowledge of Critical Design Tasks
Team	Staffing Design Teams

Component	Major Elements of the Component
process knowledge	Project Planning Dealing with Organizational Issues Developing and following a Management Plan

The study also identified success factors and an expert process for instructional design activities. The expert process identified was centered on a rapid prototyping approach, with activities cycling between design, development and evaluation on a lesson by lesson basis. Familiar ADDIE type instructional design tasks provided structural inputs to the cycle, along with overall designer knowledge and skills, and team management activities. An ability to follow this type of real-world instructional design approach is a capability employers will expect of instructional designers with a bachelor's degree.

Proposed Program of Study for a BS in Instructional Design

Meeting the market demand for instructional designers requires a training program that is consistent with employer expectations, and that addresses practical skills and knowledge. A program of study based on research into instructional design practices, particularly the practices of expert designers, should help provide those practical skills and knowledge. The mission of such a program would be to prepare students to function initially as junior instructional designers working under supervision, assisting with instructional design and development projects and applying standardized instructional design approaches to meet ordinary training and educational technology requirements. As a practical job preparation, in addition to regular coursework, this type of program would ideally provide hands-on experiences through immersion type studio work, applied project-based coursework, case-study seminars, a practicum, or an internship. Several master's degree programs in instructional design have pioneered hands-on approaches to preparing instructional designers for the workplace, and might serve as examples for an ideal four-year undergraduate program or equivalent credential.

A Proposed Hands-on, Practical Bachelor's Program

The following bachelor's level program follows a practical, hand-on learning philosophy, consistent with ideas in situated learning (Anderson et al, 1996). The program ideas are derived from research into instructional design practices as described above. The basic design of the curriculum would be to teach foundation skills, provide essential design skills and knowledge, and facilitate practical work experience. The program would teach best ID practices, preparing students for the workplace. The curriculum would consist of a core of classes with electives that would allow the student to specialize in a given instructional strategy or technology, or a specific design team member role such as media development, CBT/courseware, management, etc. Coursework would also include useful marketing and business skills, preparing the student for a professional practice as an instructional designer.

Foundation Skills

The foundation skills would cover communication, writing, technology and other areas essential to the work of instructional design. Additional foundational coursework in the learning sciences and other areas supportive of the instructional design process might be included.

Some program prerequisites would be taken during the freshman and sophomore years, such as:

1. College-level writing with an emphasis on instructional writing (teaching a process that facilitates writing expository or story-based educational materials.)

2. A minor in English, Psychology, Computer Science or Business would be recommended, starting with the first year electives (some courses taken during the freshman year).

3. If the student is interested in working in a specific industry, a survey course related to that industry would be recommended.

Proposed Courses and Major Topics

The following is a list of courses and their major topics. These types of courses would meet many of the needs outlined in this paper, and provide skills consistent with expert instructional design practices. Numbers given to the courses are arbitrary, although they do show a proposed program year for the course (100=freshman, 200=sophomore, 300=junior, 400=senior). Some courses might span multiple terms, so this list is strictly notional, a convenient organization of necessary topics:

101: Introduction to ID
- What is design
- Instructional system architecture (layers of design)
- The learning and performance environment (design context)
- The role of the instructional designer (working with clients)
- The profession of instructional design (types of jobs/work, professional skills and knowledge required, personal and organizational skills, etc.)
- Methods and models of instructional design
- The work world environment
- Review of sample computer-based courseware system
- Review of a blended onsite/online curriculum
- Review of an instructionally designed classroom curriculum
- Self-profile testing (learning styles, MBTI, interest survey, capabilities analysis, aptitude survey, etc., to identify issues they may face personally as a designer, areas of ability for specialization within the field, etc.)

201: Instructional design standard process
- Analysis— How to conduct a front-end analysis; to select and use a variety of techniques for determining training outcomes, terminal objectives and content; to analyze learner and environment characteristics; to recommend non-training-related performance improvement solutions; to demonstrate knowledge of the full range of learning technologies and their use in instructional delivery.
- Design— How to write enabling objectives; to create design documents for various instructional strategies; to design instruction which reflects an understanding of diverse learners and learning styles.
- Development— How to develop instructional materials ranging from instructor/learning guides to WBT storyboards/scripts; to develop assessments aligned to objectives; to write clear and coherent instructional text and/or scripts; to build workable specifications and/or guide the work of software or media/graphic developers.
- Implementation— How to successfully plan and manage individual responsibilities as part of an instructional design project team; to participate in training pilots and launches; to follow a project plan; to track individual activities and effort; and to apply business skills to maintain and foster positive customer relationships; to develop instructor packages and documentation required for instructional system implementation; to provide design support during implementation.
- Evaluation – How to develop evaluation strategies with client; plan/implement summative/formative Level 2 evaluations as well as conduct Level 3 and 4 evaluation activities.

215: Technical ID skills/knowledge
- Authoring systems for courseware
- Programming (scripting)
- LMS
- DL systems (Blackboard, etc.)
- Video production
- Graphics and layout
- Animation
- Writing for and directing live actors and voice actors
- Electronic Performance Support Systems (EPSS)
- SCORM
- Section 508
- Web-based Training (WBT)
- Flash and Dreamweaver
- PhotoShop and PageMaker
- Interface and screen design
- Training simulation design
- Others

301: Advanced design skills and knowledge
- Learning research (learning processes, human memory, transfer)
- Effective communication skills (especially with external clients)
- Ethics of design
- Data analysis

- Flowcharting
- Conducting interviews
- Conducting literature reviews (becoming a quick SME)
- Planning and conducting effective design team meetings
- SME interview skills
- Conducting walk-throughs with SMEs
- Human factors of interface design
- Project management (basic skills)
- Role-playing and script walk-throughs with SMEs
- Surveys
- Instructional writing
- Writing test items and assessments
- Design of activities and projects
- Additional skills for various instructional strategies would be covered based on student interest.

310: Advanced design processes
- Advanced ADDIE expert process options
- Success factors
- Standard instructional software development process (for simple CBT)
- Rapid prototyping for instructional software (for complex and unprecedented systems)
- Media/graphics design and development process
- Advanced instructional script writing processes (for team writing, etc.)
- Survey of best instructional design and development practices
- How to review research related to best practices (reading case studies and research reports, problem-solving using research, etc.)

320: Design literacy
- survey of instructional strategies
- survey of highly effective instructional software products
- survey of highly effective classroom instruction
- how to analyze teaching and learning environments
- how to analyze stakeholder needs and issues (learners, instructors, publishers, employers, customers, etc.)
- survey of common instructional design applications (business, industry, military, healthcare, schooling)

350: Practicum (preparation for the internship in 450 below)
- Select a team project (not overly complex, a basic training application)
- Rotate through basic ID roles briefly on a regular project team (project manager, performance technologist, designer, SME or content research specialist, authoring/technology, media/graphics)
- Faculty managed teams, internal clients, internal SMEs, etc.
- Select a personal project role (may be a fixed role on a team project) and specialize in one role

401: Career track / specialization skills (some career tracks may require previous qualifications or demonstrated capability)
- Classroom / training designer (for regular ID jobs, advanced content and curriculum design)
- Authoring (script-writing for ID programmer, use Authorware, etc.)
- Computer courseware designer (scripting and software interface design)
- Media and graphics designer(design for and interface with all types of media, audio, graphic, animation, video; some skills, talent management, video editing, etc.)
- Instructional technologist (customer support, LMS administrator, DL software, etc.)
- Performance technologist (solving performance problems, consulting, organizational development, role of training in the organization, ROI, etc.)
- Management (project and team management, configuration control, etc.)

410: Advanced instructional strategies and their technologies (based on career track)
- Traditional platform instruction models (classroom)
- Seminar and presentation design
- Textbook writing
- Self-help book writing
- Blended learning environments (online/onsite)
- Distance learning (traditional)
- Case-based live training
- Simulation-based training (computer and live)
- Serious games
- Video based training
- Web-based training
- Frame-based computer courseware (branching)
- EPSS
- Adaptive / Intelligent training
- Interactive video
- Story-based training
- Apprenticeships
- Project-based learning
- Etc. (more may be surveyed)

420: Project Teams
- Advanced study of all team roles and functions, literacy in the 'languages' and jargon used for ID projects function at all levels of scale
  - Instructional Designer(s)
  - SME(s)
  - Project managers
  - Instructors
  - Programmers
  - Media/graphics/animation developers
  - Editor
  - Evaluators and testers (SMEs, instructors, students)
  - Customers / representatives
  - Others

- Project management
- Configuration control
- Communication and diplomacy
- Marketing (internal and external)
- Budget

450: Internship
- Work as a resident team member on a live project in a team role in which the student has demonstrated satisfactory competence in prior coursework
- Project for the school, a nonprofit organization, or a customer
- Work with Mentor and internship supervisor
- May play multiple team member roles, based on capabilities and desired specialization (manager, designer, technologist, etc.)

490: Competency review and portfolio building
- Make a presentation or write an article about practicum and internship experiences (lessons learned, etc.)
- Build portfolio presentation (slide shows, etc.)
- Write resume (part of exam will be job interview)
- Job search skills (networking, etc.)
- Review of work skills (business communication, schedule management, project team collaboration, consulting, etc.)
- Role of support groups, other continuing ed options (encourage to take additional skills and strategies classes, or how to learn about them on your own)
- Review and prepare for exam

498: Certification exam and portfolio review
- Exam (includes an instructional designer certification test, and possibly a mock job interview with a portfolio presentation)
- Review results with faculty and make any necessary adjustments / remediation
  - review parts of program
  - join another training cohort
  - alternate certification recommendations

Open Issues

This discussion paper provided a brief analysis of the gap between instructional design degrees and jobs at the bachelor's degree level. A practical bachelor's level training program was presented with examples of the types of topics that should be covered in an undergraduate program of study. The proposed program was based largely on research into the practices of instructional designers, and was specifically designed to meet the market demand for Bachelor's level instructional designers.

A number of open issues related to the identified gap and proposed undergraduate level program remain. Here are some additional points to ponder, questions to ask…

1. What would motivate the public and private academic world to produce adequate undergraduate programs to meet the market need for bachelor's level instructional designers?

2. How would the additional programs affect the job market for instructional designers?

3. Many instructional design jobs are taken by SMEs who have worked on design teams but do not have ID training. Others are taken by people with allied degrees who have taken a few seminars. How would a proliferation of BS programs or equivalent certification programs affect these people?

4. Consider the difficulty level of bachelor's degrees in allied fields such as computer science, some areas of business, education, or even engineering. Are the proposed bachelor's level ID classes realistic; are they too difficult or too simple? Is anything important missing?

5. How should bachelor's programs in ID be marketed to students and to college and university departments, textbook authors, and ultimately to employers? What are the main points that should be made?

6. Who should teach undergraduate instructional designers? What type of instructors are needed for a practical program at this level? Which credentials and what experience? Where would these programs be housed? What about non-degree programs providing equivalent credentialing?

Conclusion

This paper has presented the argument that a significant unmet market demand for bachelor-level instructional designers exists. This unmet market demand could be addressed in four-year undergraduate degrees or equivalent programs of study built around skills and knowledge identified in research into the practice of instructional design. A highly situated, practical hands-on degree program was described and possible courses for a typical BS ID program were outlined.

This has been a preliminary look at the problem, but based on this analysis there may be sufficient jobs available now for BS-level instructional designers to support a large number of undergraduate ID programs. As successful undergraduate programs are developed and graduates become known to employers, there is every reason to hope that the future role of instructional designers in education and training organizations will expand and demand for instructional designers at all levels will remain stable or even increase.

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Author Biography

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