Design Heuristics in Academic, Corporate, and Military Instruction: More Similar than Different

Cindy S. York

Peggy A. Ertmer
Contributing Editor

Despite the fact that the practice of instructional design (ID) began in the U. S. military (Branson *et al.,* 1975; Jeffrey & Bratton-Jeffrey, 2004; Reiser, 2102), there is little known regarding which design and development heuristics military instructional designers deem important to the ID process. The study reported in this article was designed to address that gap by examining the following questions: What heuristics do military instructional designers perceive to be important to their design efforts? How are these heuristics similar to or different from those deemed important by designers in academe and corporate contexts? What instructional design models, if any, do military instructional designers use to guide their practice? A survey was completed by 24 participants working in military contexts. Results suggest that the heuristics military instructional designers use do not differ markedly from those reported to be used by designers in academe or corporate contexts (York & Ertmer, 2011). That is, despite ID being practiced in a variety of contexts, the guiding heuristics appear very similar across contexts, perhaps due to the fact that they share similar roots (Corwell, Hopkins, McWhorter, & Jorden, 2006).

Cindy S. York is Assistant Professor of Instructional Technology at Northern Illinois University. Her research interests include mobile technology, technology integration, and online teaching and learning (e-mail: cindy.york@niu. edu). **Peggy A. Ertmer**, a Contributing Editor, is Professor of Learning Design and Technology at Purdue University. Her research interests relate to technology integration, teacher beliefs, and helping students become expert instructional designers, specifically through the use of case- and problem-based learning methods (e-mail: pertmer@purdue.edu).

Background

Instructional Design Heuristics

Previous research has shown that although experienced designers apply ID models in their practice (Ertmer *et al.,* 2008; Ertmer, York, & Gedik, 2009), applications tend to be more heuristic than algorithmic (Kirschner, Carr, van Merriënboer, & Sloep, 2002; Nelson, 1988; Romiszowski, 1981). Heuristics comprise guidelines that experienced designers use when solving ill-structured problems (Dudczak, 1995; Lewis, 2006), and can be thought of as principles or personal rules of thumb. These heuristics typically develop from designers' experiences, including lessons learned while working on complex projects (Ertmer *et al.,* 2009; Nelson, 2003; Perez, Johnson, & Emery, 1995).

Although adhering to these heuristics does not guarantee success, and different situations will require different heuristic strategies, they provide designers with a starting point when encountering ill-structured problems (Romiszowski, 1981). Heuristics are important to examine because they provide insight into the instructional design process and enable us to show novice instructional designers what practitioners do in the field.

Corporate/Academe Instructional Design

There are a number of different fields in which instructional designers can be employed, such as higher education, K–12 education, business and industry, health care, and non-profits, to name a few. In an earlier Delphi study (York & Ertmer, 2011), the majority of our ID participants were working either in corporate settings or higher education. Using the Delphi process, we identified 61 instructional design heuristics that the participants considered important to the ID process. Categorically, those heuristics related to learner/audience, communication, management, solutions/deliverables, design process, design team, design problem, and client (York, 2010).

It is generally agreed that it is more important for novice IDers to understand what practicing instructional designers do (Rowland, 1991), as opposed to memorizing ID model procedures (Silber, 2007). Therefore, by better understanding the heuristics used during the ID process, it could be possible for novices to improve their own performances. Just as ID models are provided for novices to learn the steps of the ID process, heuristics might help novices by addressing additional components of the process, such as communication and management aspects (York, 2010). The Delphi study (York & Ertmer, 2011) provided a basis for understanding the ID heuristics used in corporate and academe contexts, but unfortunately it did not include military instructional design participants.

Military Instructional Design

Instructional designers in the military can be civilians, civilian contractors, or military personnel. In general,

their main design activities relate to the design of educational courses, training simulations, or computer-based instruction (C. Larsen, personal communication, July 24, 2012). Military training is typically constrained to an acquisition cycle or the addition of a new weapons system (Anonymous participant, April 25, 2011). The speed at which designers are expected to produce a product can be much greater in the military than in other settings. In addition, military instructional design tends to be focused more exclusively on the performance of the end user. This means the designer is focusing on solutions to poor performance versus on an intervention, which could mean instituting job aids or other strategies rather than training for memory solutions (Anonymous participant, July 5, 2011).

Military designers have varied backgrounds in instructional design and thus have been exposed to a number of different instructional design models. Some military fields have their own instructional design training manuals, such as the U.S. Army Training and Doctrine Command (TRADOC), which stores a number of publications aimed at ID. For example, the TRADOC Website (as of March 1, 2013) includes the following publications: *Systems Approach to Training: Analysis; Systems Approach to Training: Testing; Systems Approach to Training: Evaluation; Systems Approach to Training: Course and Courseware Validation;* and *Multimedia Courseware Development Guide (http://www.tradoc.army.mil/tpubs/pamndx.htm),* among others. The Naval Education and Training Command (previously known as NAVEDTRA, now known as NETC) also has its own training manuals.

The military Systems Approach to Training (SAT) "determines whether or not training is needed; what is trained; who needs the training; how, how well, and where the training is presented; and the training support/resources required to produce, distribute, implement, and evaluate the required education/training products" (TRADOC, 2004, p. 6). The SAT Analysis document includes the following analysis components: needs, mission, collective task, job, and individual task analysis. It should be noted that the differences between traditional ID analyses would be the "mission" analysis as well as having both a "collective task" and an "individual task" analysis. If you consider that in the military, not all things are done by individuals, but rather in groups, the collective task is important. Mission analysis is similar to context or environment analysis but obviously centers on military missions. The TRADOC (2012) document titled *Training Development in Support of the Operational Domain* states that it:

> ...utilizes the instructional system design model often referred to as the analysis, design, development, implementation, and evaluation (ADDIE) process. This pamphlet is directed at developers, contractors, commissioned officers, and senior noncommissioned officers (NCOs) (E7–E9) within TRADOC proponent institutions, and associated Active Army (AA), Army National Guard (ARNG), and United States Army Reserve (USAR) agencies and directorates who design and develop products to support unit training. (p. 7)

So, although they have their own instructional design manuals, the military still appears to rely on the ADDIE process.

Purpose

Prior research has shown that instructional designers use heuristics when problem solving and that they consider some heuristics to be more important than others (Ertmer *et al.,* 2008; York & Ertmer, 2011). This study was designed to build on our previous findings by investigating a specific population of instructional designers, those who work in a military context. In our previous Delphi study, 61 heuristics (out of 75) emerged as being important to the instructional design process by designers working in academia and corporate/industry contexts. However, the population of participants did not include those working in a military context. We wondered whether the practice of ID in the military might look different than it does in these other contexts. Larson's (2004) study of the different career environments of instructional designers found that approximately 10% of her respondents were working in a government/military context. Instructional design programs prepare people to practice instructional design in a variety of fields (military included); as such, we felt it was important to determine if the heuristics identified by designers working in academe and corporate contexts aligned with those identified by designers who were working in a military context.

To examine the similarities and differences among designers' heuristics, we invited participants working in a military context to respond to the same survey used in our previous study (York & Ertmer, 2011). In addition, we asked the military IDers to identify what (if any) ID model they used in practice. Ultimately, our goal was to identify the types of design principles we should be teaching our ID students to better prepare them for the profession, regardless of whether they chose to be a designer in a military context, academia, or industry.

The Study Method

Selection of Participants

Approximately five e-mail messages were sent to educators and trainers, known to be working in a military context, asking them to distribute a survey link to instructional designers practicing in a military context who might be willing to participate. In addition, e-mail recipients were asked to forward the e-mail to other instructional designers working in a military context

(referral approach). Twenty-four participants completed the survey. Demographic questions gathered the following information: gender, age, current position, number of years in that position, organization, formal education, summary of instructional design background, instructional delivery formats used, ID models taught to use, and model(s) currently being used in their practice.

The final group of participants consisted of 15 males (63%) and nine females (38%). Ages were listed by range: 21–30 years (n = 1; 4%), 31–40 (n = 4; 17%), 41–50 (n = 8; 33%), 51–60 (n = 9; 38%), and 61+ (n = 2; 8%). Participants averaged 12 years of ID experience, ranging from less than two to 45 years. The highest degree earned by participants included PhD (n = 2), EdD (n = 1), Master's degree (n = 16), Bachelor's degree (n = 2), Associate's degree (n = 2), and none (n = 1). All participants were currently practicing instructional design with a range of job titles. The primary job title of participants was instructional systems specialist (n = 12). Other job titles included training developer (n = 2), instructional designer (n = 2), performance analyst (n = 2), instructional systems developer (n = 1), lessons learned analyst (n = 1), deputy director of training (n = 1), chief, learning innovations (n = 1), training specialist (n = 1), and supervisor training administrator (n = 1). Some of the military branches represented were Department of the Army, U.S. Army Aviation Logistics School, U.S. Army Sergeants Major Academy, U.S. Coast Guard, U.S. Army Chaplain Center and School, Center for Naval Aviation Technical Training, Combined Arms Support Command, and Army Civilian University.

Data Collection

The survey was available over a four-month period in 2011. Responses began in April and ended in July. The survey was provided online, hosted on a secure server. An e-mail was distributed to participants describing the survey procedure as well as how to access the survey. Because participation was completely anonymous, no follow-up e-mails could be sent to participants. The survey contained specific instructions on how to access the survey, rate heuristics, identify whether or not they used the heuristics in their practice and how frequently, and to provide open-ended comments (see ***Appendix A*** for sample questions). The survey contained four parts: (a) a list of 75 heuristics (from the previous Delphi study; York & Ertmer, 2011) to be rated on a six-point Likert-scale (from one = strongly disagree to six = strongly agree), based on perceived importance to the success of instructional design in a military context; (b) two questions asking participants if they used this heuristic in their practice and, if so, how frequently; (c) a space to add additional heuristics; and (d) a question asking participants to identify the ten most important heuristics from the list of 75 heuristics provided.

Data Analysis

To compare the relative strength of agreement among the 75 heuristics, we compiled them into a rank-ordered list, based on mean ratings. ID models identified by participants were compiled. We also compared the results from the military ID participants with the data from the previous Delphi study.

Results/Discussion

This study was designed to address a gap identified by a previous study (York & Ertmer, 2011), which examined the perceived importance of 75 heuristics to the instructional design process, using a Delphi study. In the previous study, participants represented academia and corporate/industry, but they did not include military instructional design participants. In this follow-up study, we asked instructional designers who were working in a military context to review the original 75 heuristics in order to determine the similarities and differences among the perceptions of designers working in different contexts.

Heuristics Identified as Important to the Military ID Process. Participants were asked to rate each of 75 heuristics as to their importance to military instructional design on a six-point Likert-scale. A rank order was determined for the list of heuristics based on the mean ratings of agreement from the survey. The means for the 75 heuristics ranged from 3.43 to 5.96 (out of 6.0). The means for the top ten heuristics ranged from 5.59 to 5.96 (all were within 0.4 of a point). Participants mildly to strongly agreed that all but five of the 75 heuristics were important to the military ID process. This is not to suggest that these are the only heuristics in the participants' repertoires, only that these were among the ones they believed were important.

Participants were also asked if there were any additional heuristics they wanted to add to the list, and six additional heuristics were suggested. These six heuristics were:

- Have an idea of what 'right' looks like before the development phase. Don't wait to see right before you choose it.
- Spend more time in analysis and it will reduce revision.
- Never be afraid to revise (again and again and again).
- Consider all of the design decisions from the learner perspective.
- Design assessments to ensure outcomes are being met. Assessments need to be valid and relevant/realistic.
- Develop an atmosphere of respect and understanding with the development team and involve them in the process as early as possible.

The first five additional heuristics address the ADDIE components of Analysis and Design, whereas the last one relates to working with a team.

Table 1. Comparison of military heuristic means to Delphi study means.

Heuristic	Military Study Mean	Delphi Study Mean
Know your learners/target audience.	5.96	5.88
Be honest with the client.	5.91	5.71
There are things that need to be determined at the front end in order to make you successful at the back end.	5.74	5.80
When designing instruction, consider active learning. Ask yourself, "How can I make learners more actively engaged?"	5.68	5.68
Determine what it is you want your learners to perform after the instructional experience. What is the criterion for successful performance?	5.65	5.88

Of the 75 heuristics rated, participant agreement was highest for the heuristic, "Know your learners/target audience" with a mean of 5.96/6.0. Of the top ten heuristics, three related to understanding the learners, two related to working with a client, while the others related to foundational theories, learning strategies, working with a team, and design principles. The majority of these components can be found in many ID models (Gustafson & Branch, 2002), although "working with a client" is generally not found within ID models. The second highest heuristic, "Be honest with the client" (with a mean of 5.91/6.0), emphasizes the professional/ethical responsibilities of the IDer. Working with a client is a key responsibility of an instructional designer (Liu, Gibby, Quiros, & Demps, 2002), regardless of the context in which he/she works. However, according to one of our anonymous participants, "...the essence of the instructional designer working in a military context, i.e., at a military training institution, [is different than that of] the outsider (contractor) working for the military" (April 21, 2011). Unfortunately, we did not have our participants identify if they were contractors or military personnel, only if they were involved in military instructional design.

Comparison of Military Results to Academia/Corporate Results. Interestingly, the heuristic with the highest mean from the previous study was also the heuristic with the highest mean for military ID practitioners: Know your learners/target audience, with a mean of 5.96/6.0 for the military study and 5.88/6.0 for the Delphi study. This, then, suggests that no matter the context in which instruction is being designed, the analysis of the learner/target audience is considered key. The authors believe that a number of academicians would argue that they know their learners because they teach them year after year; however, societal changes could change learners over time. Doing a short survey at the first interaction with a new set of learners can go far towards an accurate analysis of one's learners and doesn't take much time to do.

When comparing the top ten heuristics with the highest means for both studies, five overlap (see ***Table 1***): (1) Know your learners/target audience; (2) Be honest with the client; (3) There are things that need to be determined at the front end in order to make you successful at the back end; (4) When designing instruction, consider active learning. Ask yourself, "How can I make learners more actively engaged?" and (5) Determine what it is you want your learners to perform after the instructional experience. What is the criterion for successful performance? So in addition to the three that overlap, and the top five (based on frequency of use), two others are also significantly important—active learning and the performance criterion. This is a good indication that these heuristics are context independent. All learners, no matter if in academia, industry, or military, need to be engaged in their learning, and they need to know what it is they will be able to perform once they have learned. Audience, client, and outcomes cut across all three contexts of academia, military, and corporate/industry. Therefore, we should ensure, when teaching novices, that they understand and can perform these key design components.

Reported Frequency of Heuristic Use. The survey also asked participants to report which heuristics they currently used and how frequently (see ***Appendix B*** for the most-used heuristics). Four heuristics were reported as being used by 100% of the participants. This doesn't mean that they used the heuristic 100% of the time, but that all participants use that heuristic. For example, "Be honest with the client" was used by 100% of the participants, but only 83% reported using it in every project. The other 17% reported using it in most projects. Although it was an anonymous survey, we wondered if any participants would admit to *not* being honest with the client. Another explanation is that perhaps, at times, they were not able to completely disclose their intent due to the sensitive nature of the content.

Table 2. The most frequently used heuristics as reported by military participants.

Heuristic	Every Project	Most Projects	Some Projects	Few Projects
Know your learners/target audience.	90.48%	9.52%	0.00%	0.00%
Determine what it is you want your learners to perform after the instructional experience. What is the criterion for successful performance?	86.36%	9.09%	0.00%	4.55%
Be honest with the client.	82.61%	17.39%	0.00%	0.00%
It is the instructional designer's job to press for quality in the design.	80.95%	14.29%	4.76%	0.00%
Ask yourself, "Is instruction the solution to this problem?"	72.22%	11.11%	5.56%	11.11%

The other three heuristics that 100% of our participants used were (see ***Appendix B***): "There are things that need to be determined at the front end in order to make you successful at the back end"; "When verifying information, you often will learn more information"; and "Determine what it is you want your learners to perform after the instructional experience. What is the criterion for successful performance?" "Know your learners/target audience" was reported as being used by 95% of the participants and, of those who use it, 90% reported using it in every project, with the other 10% using it in most projects.

The top five heuristics reported to be used in every project included the following (see ***Table 2***): "Know your learners/target audience" (100% of the participants used this heuristic in every project or in most projects; 90% and 10%, respectively); "Determine what it is you want your learners to perform after the instructional experience. What is the criterion for successful performance?" (95% of the participants used this heuristic in every project or in most projects; 86% and 9%, respectively); "Be honest with the client" (100% of the participants used this heuristic in every project or in most projects; 83% and 17%, respectively); "It is the instructional designer's job to press for quality in the design" (95% of the participants used this heuristic in every project and most projects; 81% and 14%, respectively); and "Ask yourself, 'Is instruction the solution to this problem?'" (83% of the participants used this heuristic in every project and most projects; 72% and 11%, respectively). Again, knowing your learners and what you want them to learn and being honest with the client stand out as the most frequently used heuristics.

Instructional Design Models Used by Military IDers. We also examined what ID models, if any, the participants reported using. Twenty participants (83%) reported using an ID model. Of those who used models, ADDIE (Analysis, Design, Development, Implementation, and Evaluation) and PADDIE (**P**lan & ADDIE; Jeffery & Bratton-Jeffery, 2004) were used most frequently (n = 10). Systems Approach to Training (SAT) was also mentioned (n = 5) as being used. Six participants reported using more than one model. Other models reported (in participants' own words) as being used included: Cognitive, Clark Guided Experiential Learning Model, Rapid Prototyping, Dick and Carey, Michael Allen, Criterion Reference, USCG Accomplished Based Curriculum Development, SABA, and ABCD. It should be noted that we could not identify the ABCD instructional design model, but rather the ABCD model for writing performance objectives (Smaldino, Lowther, & Russell, 2012). Nor could we identify which model "cognitive" was referring to, as it could be a number of different ID models, such as Dick and Carey (1996), Smith and Ragan (2005), or the Morrison, Ross, and Kemp model (2004). We believe the SABA model referred to Saba and Shearer's (1994) writing on "theoretical concepts in a dynamic model of distance education."

According to Jeffery and Bratton-Jeffery (2004), there are also a number of models used in the military ID field that were not mentioned by our participants, such as: Quality-based ID Model, Porter's Value Chain Model, the Systemic Business Process Model (which combines the Value Chain Model and PADDIE), and Shareable Content Object Reference Model (SCORM). SCORM was established by the Department of Defense's Advanced Distributed Learning (ADL) organization to "ensure that training and education content could be shared across the services" (Jeffery & Bratton-Jeffery, 2004, p. 227). These models are more "process-based performance and quality improvement analytic models" than those based on education and learning theories (Jeffery & Bratton-Jeffery, 2004, p. 218). Jeffery and Bratton-Jeffery (2004) stated:

> The current methodology for developing instructional products is the tendency to allow design to drive the product rather than the stakeholder needs and requirements. Only by starting with the stakeholder needs and requirements, basing the design on these needs and requirements, and tracking the needs and requirement all the way through the design process, will the instructional product succeed. (p. 241)

This seems to support the need to work closely with the client (stakeholder) as many of the heuristics suggest.

As stated earlier, 20 of the 24 participants listed at least one ID model they use. In an earlier study of 16 experienced designers, 14 of them indicated they "used ID models to frame their thinking about design problems" (Ertmer *et al.*, 2009, p. 23). Unlike our Delphi study (York & Ertmer, 2011), those 16 participants practiced in a variety of different settings including academia, corporate/industry, government, and military. This suggests that designers in virtually all environments use some form of an ID model, which appears to validate the importance of teaching ID models to novice instructional designers.

Implications/Conclusion

Given the importance of context to the practice of instructional designs, we expected that the practice of instructional design in the military might look different than it does in academia and corporate/industry contexts. Because the military have their own training manuals for instructional design and their own unique protocols (C. Larsen, personal communication, July 24, 2012), the manner in which ID is practiced might reflect these differences. Both civilians and military personnel are mandated to follow those protocols, thus possibly giving them less freedom to make decisions than instructional designers in an academic or corporate/industry setting. In addition, the military makes an interesting distinction between education and training. According to C. Larsen (personal communication, July 24, 2012):

> [In the military], instruction, and therefore learning, can be said to involve training when both the question and the outcome are known. That is, the training can be observed for the correct response. The learner knows what is being asked and can respond (e.g., "In the event of a chemical attack, don protective mask in nine seconds or less."). Instruction, and therefore learning, can be said to involve education when either the response is unknown, or the question is unknown. In such cases the correct response cannot be readily observed because there is no consensus of a correct answer...or possibly even a recognized problem. In such cases only a methodical education will adequately prepare the learner for success.

This was supported by a comment made by one of our military participants:

> The old adage of training verses education comes to mind. Working for the military, we ISDs must remind ourselves of the difference. I, personally, am an educator. When I came to work for the military after teaching in the school systems, it was a very different atmosphere. Add to that, the fact that most of our content is technical, requiring hands-on experience to fully comprehend. Military training is also often constrained by the acquisition cycle or the addition of new weapons systems, making training very dynamic at first.

Another participant commented:

> Our focus is the performance of the end user. The CG [Coast Guard] relies heavily on performance-based instruction and requires all new performances to undergo the HPT process to ensure that 'train to memory' solutions are truly valid. As an analyst it's my job to identify solutions to poor performance. We focus on what the performer should be doing, not on a particular intervention. 80% of the time we find that training is not the answer. We also tend to push people toward the use of a job aid, rather then 'train to memory' solutions. This minimizes the cost and infrastructure required to support traditional brick and mortar training.

The hands-on aspect of military training might be a key difference between learning *about* something (theory) and learning *how to use* something (a weapon). Thus, the distinction between education and training becomes more apparent in the military setting, as opposed to an academic setting. We believe this distinction does not appear to be as hard and fast a rule in academia or corporate/industry. In addition, there are other aspects to the practice of ID in the military that the participants suggested are different than academia. For example, one military participant stated:

> I have a relatively small opportunity to develop at all. We are mainly in the business of maintaining and developing at the module and lesson level within an already established overall design. The desired results of Army training change relatively infrequently.

The time factor always plays a role in the constraints placed on an ID project, but we wonder if the nature of the military reduces the pushback of going overtime on a project. If it is true that military IDers aren't designing and developing instruction from the analysis phase through the evaluation phase, but are instead consistently tweaking bits of lessons and modules here and there, then we believe the heuristics they follow would be different. Of course, that one participant might be in a unique situation.

Based on the results of this survey, instructional designers in all three fields actually appeared more similar than different, agreeing that the most important heuristic for the instructional design process was, "Know your learners/target audience." So whether one is designing or developing education, instruction, or training, one must know his/her target audience first. No matter the context in which you are designing instruction, you have to know the capabilities, skills, and prior knowledge of your audience, as well as what they will be able to do to show that they have learned. You also have to

know if education is the correct solution or if a job aid or other type of intervention will suffice (e.g., increasing incentives, resolving conflicts, changing attitudes).

We suggest that ID programs introduce their students to a variety of ID models as well as point them to publicly available training manuals from the military such as TRADOC *(www.tradoc.army.mil)*. Imagine allowing ID students to compare/contrast the military ID training manuals with other commonly used ID books/models.

It is hoped that the results of this study, in conjunction with those from the previous study, will help us better understand the types of design principles we should be teaching our ID students to better prepare them for the profession.

Future research will explore if specific heuristics are used in specific contexts, such as computer-based instruction, online learning, face-to-face instruction, workshops, etc. It could also be productive to ask new instructional designers questions about their experiences, such as: (a) what was the most important thing you learned, and (b) about what do you wish you learned more? From this, we could tailor our graduate programs to include elements practitioners find important versus what the instructor or textbook emphasizes. □

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Appendix A: *Survey Sample Questions*

Survey Sample Questions

Please indicate your level of agreement as to its importance to the success of instructional design in a military context for each of the following heuristics, also include if you use the heuristic and if so, how freqently.

	Please indicate your level of agreement as to the heuristic's importance to the success of instructional design in a military context	Do you use this heuristic in your practice?	How frequently do you use this heuristic?
1. As a designer you need to listen more than you talk.			
2. When communicating with the client, use visuals and documents in order to prevent miscommunication.			
3. You need to understand and speak the language of your client.			
4. Don't use technical instructional design terminology with the client unless you have to.			
5. Verify all the information you receive from the client to prevent miscommunication.			
6. Be honest with the client.			
7. Acknowledge your limitations. Don't accept a job that is outside of your expertise.			
8. You may have to mock up something to show the client to make sure that you get all of the desired outcomes right.			
9. Ask all possible relevant questions throughout all phases of the design process.			
10. Sometimes the client will not tell you all there is to know about a problem.			

Appendix B: *Heuristic Use by Survey Participants: Most-Used Heuristics*

Heuristic	Yes	No
Be honest with the client.	100.00%	0.00%
When verifying information, you often will learn more information.	100.00%	0.00%
There are things that need to be determined at the front end in order to make you successful at the back end.	100.00%	0.00%
Determine what it is you want your learners to perform after the instructional experience. What is the criterion for successful performance?	100.00%	0.00%
Ask all possible relevant questions throughout all phases of the design process.	95.65%	4.35%
Constraints are a key to design. Look for constraints that have been placed on a project.	95.65%	4.35%
It is the instructional designer's job to press for quality in the design.	95.45%	4.55%
Figure out who all the stakeholders are in the room. And figure out who is not in the room that is still a stakeholder.	95.24%	4.76%
As you move through the instructional design process, come back to the analysis component again and again.	95.24%	4.76%
When faced with something complex, look for previous examples that have characteristics you can draw upon, that can give you ideas on how to solve the problem.	95.24%	4.76%
Be prepared to think abstractly.	95.24%	4.76%
Know your learners/target audience.	95.24%	4.76%
Approach the design problem with the end in mind. What are the deliverables? What are the learning/performance outcomes?	95.24%	4.76%
Understand that every design situation is unique.	95.24%	4.76%
You have to be sensitive to the context and the culture of the client.	95.00%	5.00%