

Instructional Design Gap Analysis Worksheets

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Gap Analysis Model

| Type of Gap | Definition | Questions to Ask |
|---------------------------|--|---|
| Information/ Knowledge | Part or all of the gap is information – the learner needs to be familiar, recall, or be able to access certain information. | <ul style="list-style-type: none">• Is this pre-requisite knowledge for a procedure or skill?• Can this knowledge be put into a job aid that employees access?• If infrequently used, how will learners' knowledge be refreshed, and will they have access to just-in-time resources? |
| Procedure | The learner needs to know, or use a job aid, to follow a set of steps accurately. Procedures are largely unambiguous set of instructions that do not require judgement. | <ul style="list-style-type: none">• Are there any points where significant judgment comes in to play?• Does the employee need to memorize the procedure, or can they work from a job aid (particularly if the procedure is infrequently used)?• How important is error-free performance? |
| Skill | The learner needs to be able to perform a competency that requires practice, feedback, and coaching. Outcomes can be highly variable. Skills may require expertise and judgment. | <ul style="list-style-type: none">• How much practice will be required for proficiency?• What standard of performance is required?• How much variability is there for correct outcomes?• How will the employee receive feedback and coaching? |
| Habit | The learner needs to adopt a consistent behavior in response to a trigger in the environment. These are typically smaller behaviors that need to be eventually automatic. | <ul style="list-style-type: none">• What is the trigger that the habit can be tied to?• How much practice will be required to fully engrain the habit?• How will the habit be reinforced consistently in the workplace?• Are the learners actively engaged in their own habit selection and formation? |
| Motivation/Affect | These gaps are between knowledge and performance. This is when a learner knows the correct action, and has the skills necessary, but does not act correctly. | <ul style="list-style-type: none">• What is the actual reason for the behavior (or lack of behavior)?• What is the intrinsic reward, and how immediate and tangible is it? |
| Environment | This is a special category. Frequently, the gap is not in the learner, but in the process or the environment, and is not a training/learning problem. | <ul style="list-style-type: none">• Can changes be made to the environment rather than the learner?• How important is error-free performance?• Are there any ways to shorten, consolidate or streamline processes?• Can prompts or triggers be built into the actual environment? |

Gap Analysis

Learning Objective:

- Knowledge / Information
- Procedure
- Skill
- Habit
- Motivation / Affect
- Environment

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Knowledge / Information Levels

| Level Required | Definition | Example: Product Knowledge | Considerations for Learning Design |
|--------------------|---|---|--|
| Aware | Aware of, can remember that they know the topic, would know to look further if needed, introduced as groundwork for later use | Knows that a product exists for a particular customer need but would have to look it up to do anything further | <ul style="list-style-type: none">• Explanation may be sufficient• Knowledge will decay, and may need to be refreshed• There should be a clear path to learn more or get reference material |
| Familiar | Can use but may need a refresh or additional support | Knows the product and can talk to the client about it at a high level, but may need to reference materials for details | <ul style="list-style-type: none">• Case examples may be necessary• Spacing and refreshing may be necessary• Learner will need to interact with information to gain sufficient familiarity, including application practice• Infrequently used information will need performance support resources |
| Known | Knows completely without support (or only minimal support), internalized knowledge, carries around in their head | Very familiar with the product – can talk to the customer about it as much as needed and does not need to consult a reference | <ul style="list-style-type: none">• Learners will need a large amount of practice using the information• Spacing and refreshing will be necessary |
| Deep Understanding | Knows deeply and understands why, can use to problem-solve, strategize and generate new knowledge | Can contribute to conversations about how to modify the product to better match customer needs, or what new products should be considered | <ul style="list-style-type: none">• Learners will need practical experience• Learners will have to have an understanding of the underlying principles• Learner may also need a large body of relevant and related expertise |

Knowledge/Information Worksheet

Learning Objective:

What knowledge is required?

What level of knowledge do they need to have?

What learning strategies will you use?

Learning Objective:

What knowledge is required?

What level of knowledge do they need to have?

What learning strategies will you use?

Procedure

Learning Objective:

What level of performance is required:

- Conscious Effort – can perform with aids and support
- Proficiency – can perform mostly without aids or support
- Unconscious Competence – can perform entirely without aids or support

How important is error-free performance?

- Minimal – errors can be caught and coaching is available
- Standard – should perform largely without errors, though quality checks and coaching are available if needed
- Crucial – little or no errors are acceptable (e.g. due safety concerns) and error-free performance should happen regardless of quality checks and no coaching should be required

Does the learner need to perform automatically or at a high rate of speed?

Should the learner be using a job aid or other support during performance?

What learning strategies will you use?

Skills Identification

Key Questions

Is it reasonable to think somebody can proficient without practice?

Does this task require significant judgement or decision-making?

Considerations for Learning Design

If someone can perform correctly without practice, or just by following the steps, then it's probably a procedure. If practice is required then it's almost certainly a skill.

By this definition of skill, practice is a required part of the learning experience.

Procedures have well-defined rule sets. We know exactly what people have to do.

Skill situations may be more ambiguous, and require judgement based on differing conditions, which means learner need to practice multiple scenarios, and practice decision-making and judgement.

Skills Categories

| Type | Description | Design Implications |
|--------------------|--|---|
| Simple | <p>Simple skills are skills where we have well-defined problems, the rules are known, and we know what correct performance looks like. For example, flying an airplane on a routine flight or playing a piece of music would be a simple skill by this definition. Simple in this context doesn't mean short or basic -- just that all the variables are known, and correct performance has been defined. Other simple skills could be:</p> <ul style="list-style-type: none">• Updating a medical record• Running a hotel breakfast service• Daily manufacturing plant operations | <p>Simple skills are essentially procedural and are already well-served by most traditional learning and development methods, though ensuring learner have enough practice is always a challenge.</p> |
| Complicated | <p>Complicated skills are skills where correct performance probably exists but can only be identified through analysis or expertise that is learned through repeated exposure and practice. So, for example, structuring a successful research project or creating a profitable marketing proposal might be complicated -- there's probably a right answer, but expertise and experience are crucial for good performance. Hiring experts for complicated skills should pay off, because their deep expertise allows them to narrow the range of possible solutions very quickly, in the same way an expert chess player can read the board and discard bad options rapidly, focusing only a few productive lines of play.</p> <p>Complicated skills could include:</p> <ul style="list-style-type: none">• Medical diagnosis• Business strategy selection• Purchasing decisions | <p>Complicated skills require enough practice and exposure to case examples to start building up an internal pattern database. Learners often do not get to see enough case examples to be able to generalize principles to new examples.</p> |

Skills Categories, continued

| Type | Description | Design Implications |
|----------------|---|--|
| Complex | <p>Complex skills are ones where it's possible that no right answers, and instead what is needed is the ability to analyze patterns as they emerge, usually in changing or unstable circumstances. For example, if you ask a pricing expert how much to charge for a product, that person is extremely unlikely to give you a direct answer. Instead, they ask questions and suggest methods of inquiry to use to derive a best option that can be tested in the marketplace. There is no "right" answer, but it may be possible to find the best approximate answer, though that may change as conditions change. A price for a product could be the best option one day, but then the next day, when the economy changes or when a competitor cuts their prices, it could be very different. Or it could change in different markets or for different audiences.</p> <p>Complex skills could include:</p> <ul style="list-style-type: none">● Choosing investment opportunities● Weather prediction● Executive leadership | <p>For complex skills, learners usually don't need policies or procedures, but rather a method of inquiry for investigating the problem, and help interpreting the results. They need the opportunity to practice these methods in realistic contexts. For example, if you were training user experience designers, you would want the training program to include practice in interviewing users, prototyping design solutions, and audience usability testing.</p> |
| Chaotic | <p>Chaotic skills -- like dealing with the scene on the ground after the earthquake hits -- require the ability to triage the situation and restore some sense of order to bring things back into one of the other domains. In many cases, skills from all the other domains are required, but also training in the ability to self-regulate in chaos.</p> <p>Emergency responders need to be able to remain calm and act in turbulent circumstance. Chaotic skills could include:</p> <ul style="list-style-type: none">● Disaster response● Military tactics● Emergency medical procedures | <p>For chaotic skills, one of the key elements of a good learning experience is enough naturalistic practice to be able to function in high-stress circumstances. For example, HUET (Helicopter Underwater Egress Training), is structured around getting learners to be able to handle the stress of water helicopter crash, and still be able to take necessary steps to recover.</p> |

Skill Variables

| Factor | Description | Example Strategy |
|-----------------------------------|--|--|
| Time to acquire | Is a particular skill fast or slow to acquire? This will give indicators about how long the learning experience may need to be. | Space out the learning experience over time for slower skills |
| Variability of performance | How much variability is there between your least and best competent performers? For example, can your most proficient bartender serve 50% more drinks/hour than your merely-acceptable bartender? Or is the difference 100%? 200%? | Have levels of learning that can be attained (proficient, intermediate, advanced) and have goals and support to help attain the higher levels |
| Variability of outcomes | How much variability is there in correct performance? Two nurses taking the same blood pressure under the same conditions should get basically the same result, but two web designers creating a website for the same client might come up with very different (but both acceptable) designs. | Domains where there is more acceptable variability in outcomes means that learning programs will probably need to show a wider degree of examples during learning, and critique activities where students share work can be useful |
| Tacit/Explicit | Any time you hear from a subject matter expert that “You know it when you see it” or “You just know”, that’s a signal that you are dealing with something they learned through tacit exposure to case examples, and that your challenge is to make sure that the learner also gets enough exposure to start to recognize patterns. | Sorting activities that use examples/non-examples can be a quick, active way for learners to get exposure to many case examples |
| Error Tolerance | How important is error-free performance? For example, if you are training flight attendants, error-free performance for safety procedures will be vital, but error-free performance for drinks service will be less critical. | Adequate practice and testing of proficiency is critical for error-free performance |
| Frequency of Use | How frequently will the participant use the skill back on the job? Frequent use on the job means you’ll need coaching and feedback mechanism in place, and infrequent use means you’ll need some way for learners to refresh or access resources. | Infrequently used skills often need good just-in-time performance support materials, or refresher training on a regular interval |
| Immediacy of Use | How quickly will participants need to be able to use the skill? For example, if you are teaching fast-food workers how to deal with a robbery, they will need immediate use of certain skills during the robbery. But the procedures for dealing with the robbery aftermath (when time is much less of a factor) could be documented in a job aid. | Immediate access skills need to be practiced until they are overlearned, and a can be done automatically while less urgent skills can be supported with performance support materials |

Skill Worksheet

Learning Objective

Time to acquire – how long does it typically take to acquire this skill?

Variability of performance – Is there a wide range between your least and best performers?

Variability of outcomes – Can there be many versions of correct performance?

Tacit/Explicit – is correct performance a case of “you know it when you see it?”

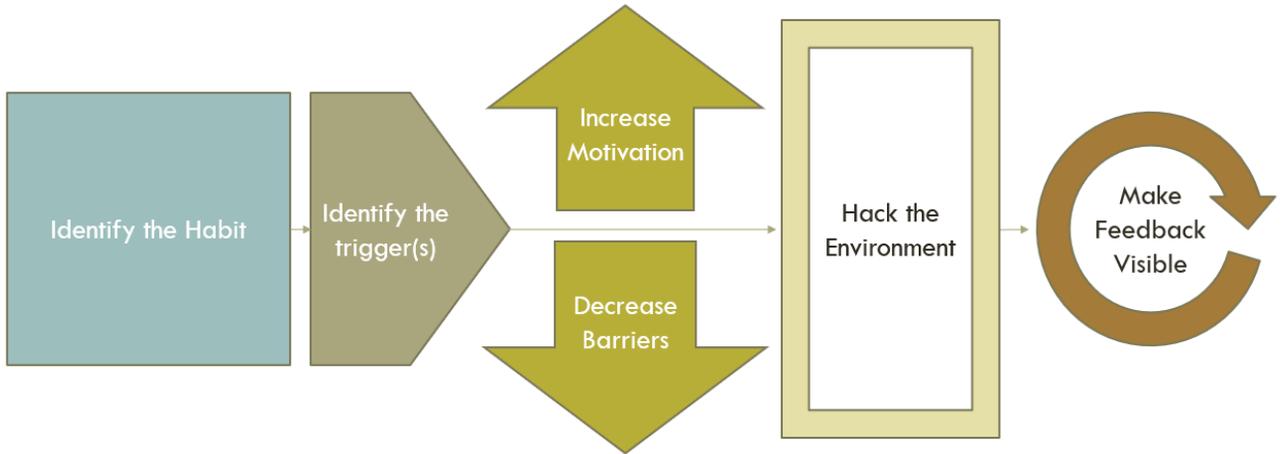
Error Tolerance – can errors be caught, or is error-free performance crucial?

Frequency of Use – how often does the learner use this skill on the job?

Immediacy of Use – how quickly does the learner need to be able to access the skill? Will they have time to use support tools?

Learning Strategies

Habit



| Question | Strategies |
|--|------------|
| What is the actual habit behavior? | |
| What is the trigger in the environment? | |
| How can you increase motivation? | |
| How can you decrease barriers? | |
| How can you hack the environment to support the habit? | |
| Can you chain it to an existing habit? | |
| How can you make feedback visible? | |

Motivation / Affect

| Cause | Description | Example | Possible remedies |
|--|---|--|--|
| Lack of feedback (specifically visible feedback) | Employees get no feedback on their efforts – they have nothing that tells them they are right or wrong. | For example, hands look clean even when they have bacteria on them. The result of proper hand washing doesn't necessarily look different than poor hand washing. | <ul style="list-style-type: none"> • Checklist • Scorecard • Practice with feedback • Role-play with feedback • Coaching on the job • Practice until it becomes automatic |
| Increased effort | A new task is extra effort without any visible benefit. | For example, cleaners may not like having extra steps to their process because they don't know why those steps are important. | <ul style="list-style-type: none"> • Stories that show the benefit • Activities that make the benefit visible/tangible • Explanation of why tasks are important |
| Unclear goals | No clear standard for performance has been defined or communicated. | For example, some cleaners may never have been told the guidelines for mixing cleaning solutions. | <ul style="list-style-type: none"> • Ensure guidelines are clear • Practice performing to guidelines with feedback • Roll out goals a few at a time, rather than all at once |
| Unlearning | An employee needs to unlearn an old behavior or habit. | For example, doctors may have a very automatic routine with patients that does not include cleaning their stethoscope between patients. | <ul style="list-style-type: none"> • Identify the trigger for the new behavior, and have the learner form an intention (“if x, then I’ll do y”) • Practice until the new habit forms • Have feedback that helps them recognize the old behavior |
| Unawareness of consequences / Bigger picture | Users do not know how the choices they make impact down the line. | For example, a laundry attendant may not understand that the gloves they wear to protect themselves can also spread infection. | <ul style="list-style-type: none"> • Use tangible or emotional examples and stories to make the consequences clear • Role-play so people can see the outcome |
| Lack of environment or process support | The environment or process does not support the desired behavior. | For example, a facility may not have a cleaning schedule in place, or may not have certain cleaning supplies. | <ul style="list-style-type: none"> • Create checklists or examples of the materials needed so people can identify gaps • Teach people strategies of what to do if they don't have everything they need |

Motivation / Affect, continued

| Cause | Description | Example | Possible remedies |
|------------------------------|---|--|--|
| Anxiety/Fear/Discomfort | The employee knows what to do, but doesn't because it's awkward or uncomfortable. | For example, employees may not want to wash their hands after shaking hands with a patient because it seems rude, or a nurse may not feel comfortable confronting a doctor about his lack of hand-washing. | <ul style="list-style-type: none"> • Role-play or practice until they become comfortable |
| Lack of confidence | The employee has been trained, but doesn't feel confident they can do it correctly. | For example, a midwife might have learned a new procedure, but may avoid it because she does not feel confident that she knows how to do it well enough. | <ul style="list-style-type: none"> • Role-play or practice until they become comfortable • Allow the employee to observe real examples before trying themselves • Coach employees to identify what specifically is difficult and help figure out strategies to address that |
| Social Proof | The employee doesn't see other co-workers or managers doing the behavior, and thinks that means she/he doesn't need to either. | For example, a nurses may see more experienced nurses wipe off equipment re-use it, rather than properly cleaning it, and assume that is okay. | <ul style="list-style-type: none"> • Make success stories visible • Let facilities see how they compare (competition) • Enlist opinion-leaders to model the correct behavior • Make sure feedback mechanisms are in place |
| Lack of Autonomy / Ownership | The employee feels like this is not something they control or have a part of. It is something being done to them, not something they believe is their responsibility. | For example, an employee could look at new guidelines and think "this isn't realistic! There's no way to do all this." | <ul style="list-style-type: none"> • Have employees work out their own strategies to overcome barriers • Have employees put reasons into their own words • Have champions at all levels • Give them some decision-making authority when possible |

Motivation / Affect, continued

| Cause | Description | Example | Possible remedies |
|-------------------------------------|--|---|---|
| Learned helplessness | The employee has tried to do the right thing in the past, and been discouraged. | For example, when an employee is trying a new behavior, they will probably be slower for a while until the new behavior becomes a habit. If their manager scolds them for being slow, they may decide to give up and go back to the older, faster behavior. | <ul style="list-style-type: none"> • Roll out changes slowly, rather than all at once, verifying each change before adding a new one • Ensure that management is supporting the new change • Make sure there is coaching and encouragement for the first few times the employee tries the new behavior |
| Negative Prior Experience | Users have had negative experiences in the past (e.g. exercise has been painful and unpleasant, possibly shameful). | For example, a health and wellness program encourages employees to share their exercise accomplishments, but some employees have a long history of failing at exercise and feeling shamed by their experience. | <ul style="list-style-type: none"> • Create opportunities to replace the negative experiences with positive experiences. • Address audience directly in identifying the issue and in identifying solutions. |
| Lack of Identity or Value Alignment | User do not see how the action matches up with their value system (e.g. climate change and political values) or identity (e.g. I'm a creative person, so rule-following feels constrictive). | For example, financial workers don't see how compliance guidelines relate to their own sense of professional competence. | <ul style="list-style-type: none"> • Identify how the behavior aligns and supports identity or values. Whenever possible, have the audience do this identification themselves. |
| Emotional Arousal | User makes impulsive decisions due to emotional arousal (anger, frustration, etc.) | For example, a worker tries to force something with the wrong tool, rather than taking time to get the right tool. | <ul style="list-style-type: none"> • Practice identifying physiological signs of emotional arousal, and help users create habit of recognizing and regulating the emotion (e.g. calming themselves down) |
| Misaligned incentives | User is incented for the wrong behavior. | For example, if accuracy of data entry is a priority, then incenting only speed of entry is a misalignment. | <ul style="list-style-type: none"> • Ensure that incentives are balanced • Ensure an appropriate feedback mechanism is in place |

Motivation Checklist

Learning objective:

| | Cause | Description |
|--|--|--|
| | Lack of feedback (specifically visible feedback) | Employees get no feedback on their efforts – they have nothing that tells them they are right or wrong. |
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| | Unclear goals | No clear standard for performance has been defined or communicated. |
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| | Lack of environment or process support | The environment or process does not support the desired behavior. |
| | Anxiety/Fear/Discomfort | The employee knows what to do, but doesn't because it's awkward or uncomfortable. |
| | Lack of confidence | The employee has been trained, but doesn't feel confident they can do it correctly. |
| | Social Proof | The employee doesn't see other co-workers or managers doing the behavior, and thinks that means she/he doesn't need to either. |
| | Lack of Autonomy / Ownership | The employee feels like this is not something they control or have a part of. It is something being done to them, not something they believe is their responsibility. |
| | Learned helplessness | The employee has tried to do the right thing in the past, and been discouraged. |
| | Negative Prior Experience | Users have had negative experiences in the past (e.g. exercise has been painful and unpleasant, possibly shameful). |
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| | Emotional Arousal | User makes impulsive decisions due to emotional arousal (anger, frustration, etc.) |
| | Misaligned incentives | User is incented for the wrong behavior. |

Environment

How can you adapt the environment or system to support the behavior?

Learning Experience Map

For your learning objective, what support does the learner need to perform well? Note: Not every learning objective will require all the boxes, and the path is not necessarily a direct line – it may possibly iterate or move left to right as needed.

| Objective: | What should the learner do to prepare for the learning experience? | What kind of learning experience(s) should the learner have? | How will the learner practice or get direct experience? | What kind of feedback, coaching or mentoring will the learner need? | What support materials does the learner need on the job? | How will infrequently used material be refreshed periodically? | How can the learner develop further, if needed? |
|------------|--|--|--|--|---|--|---|
| | Preparation | Learning | Practicing/Visceral Experience | Getting Feedback / Coaching / Mentoring | Job Aid Resources and Just-In-Time Support | Refreshing | Developing Further |
| | Examples: <ul style="list-style-type: none"> - Prework - Awareness campaign - Case Study | Examples: <ul style="list-style-type: none"> - Classroom activities - Elearning - Self-study | Examples: <ul style="list-style-type: none"> - Role plays - Hands on practice - Paired practice activities | Examples: <ul style="list-style-type: none"> - Coaching - Checklist evaluation - Self or peer evaluation | Examples: <ul style="list-style-type: none"> - Job aids - Microlearning - Performance support | Examples: <ul style="list-style-type: none"> - Refresher training - Follow up questions - Reinforcement in team meetings or by coaches | Examples: <ul style="list-style-type: none"> - Additional learning opportunities - Learning communities www.usablelearning.com |

Resources

Masterclass resources (slides decks and template download)

<http://usablelearning.com/about/presentations/masterclass-resources/>

Further reading

<http://usablelearning.com/resources/reading-list/>

Facebook group

<https://www.facebook.com/groups/designforhowpeoplelearn/>

Online courses

<http://designbetterlearning.com/>

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