



BACKWARDS DESIGN TOOLKIT

Why Backwards Design

Backwards Design is the widest known and most commonly taught and used model in general American education. Done poorly, it risks stifling learners and limiting what is deemed teachable to that which is observable and measurable, falling prey to the conceit that we have complete control over humans and their learning. However, done well, the promise and potential of Backwards Design, lie in allowing us to drain that muddy swamp of what counts as deep and relevant understanding; to clarify what was - and was not - learned in any particular learning experience, by applying scientific processes (hypotheses, concrete variables, and evidence) to yield intended outcomes. Although the use of Backwards Design logic in American education dates back at least to the 1950s, it received a tremendous upgrade in recent decades, especially by leading progressive educators and scholars Grant Wiggins and Jay McTighe, in their *Understanding By Design* series and movement.



*Draining the Muddy Swamp of What Counts as Understanding
(and how to decide what to teach in the first place)*

The model is “backwards” in the same way that architecture, cooking, and many other professions are. It begins with a clearly articulated end in mind, orienting all the designing with those core specs in constant focus, anchoring the whole process. Its logic is similar to the *scientific method*, where the educator-designer determines which *variables (learning outcomes)* are most likely to operationalize (make concrete and observable) the *educator-designer directed goals*. As such, the vital distinction between “teaching” and “learning” is in constant focus, ensuring that neither is neglected or favored.

Backwards Design Reminds us to Give Teaching and Learning our **Balanced** Attention

- Teaching is not the same thing as Learning.

Successful education always requires a balance between both...

Coverage
(Educator's need – to provide nutritious content knowledge: skills, expertise, information, understandings)

&

Uncover
(Learner's need – time and opportunities to de/reconstruct, digest, in order to use, own, internalize, and develop agency; in short, to grow, change, learn)

Educational success – ultimately determined by what learners learn, not what teachers teach – is predicated on the teacher’s *clarity and sophistication of the content* (skills, knowledge, attitudes) that they desire to teach. The intellectual rigor of the whole method is anchored in what are called, “**Enduring Understandings.**”

TOOLS OF THE THREE STAGES OF BACKWARDS DESIGN

Planning Stage 1: Desired Results

- Teaching Goals (as statements and/or as Essential Questions)
- Enduring Understandings
- Learning Outcomes

Planning Stage 2: Assessment Evidence (checking for understanding)

- Designed tasks, large or small, however formal or informal, for which learners generate artifacts, individually and/or as a group, that the designer uses to check for understanding. The artifacts provide concrete and visible evidence (or lack thereof) of the growth/achievement you desire for your learners.
- These assessments should be a combination of Authentic tasks (the higher educational ends) and supporting Building Block tasks (skill building, means to a higher end) that all make learner understandings visible

Planning Stage 3: Learning Plan

- Deciding on the sequence, type, and pacing of activities
- Carefully crafted, attuned, engaging experiences leading learners to uncover and internalize the content.

STAGE 1: DETERMINING DESIRED RESULTS

Teaching Goals

Goals Statements express what the educational leader/designer *hopes* to achieve. With goals alone, we don't yet have any proof or evidence that they are actually being achieved. Still, it's a necessary and helpful first step for backwards designers. Teaching Goals:

- include the educator's "wish list" for what they'd love to do for, to, with the participants/students, and why
- articulate what the program (session, institute, etc.) is trying to accomplish.

So, Teaching Goals are always framed from the educator's point of view:

"[I want] To teach/show that..."

Samples of Teaching Goals ranging from general to more specific:

(developed for TWF Curriculum Design Study Group)

- "To provide a framework for taking informed, interesting programmatic risks."
- To create a trusting community of practice that is both a safe and a brave space.
- "To build a community of shared discourse and vocabulary about educational design among colleagues."
- "To collectively workshop a focused combination of macro and micro curriculum design tools in response to expressed needs of participants."
- "To provide one-on-one curriculum design coaching and support, as desired, in between zoom sessions to participants regarding each of their own design goals."

Essential questions

Teaching Goals can also/instead be expressed as a certain kind of *question: essential questions*. Like Goal Statements, Essential Questions still express what the educational leader/designer *hopes* to achieve, without yet being able to demonstrate it. But for many educators, Essential Questions¹ help clarify the inquiry in which they want their learners to engage. For, as Wiggins and McTighe note, these sorts of "Penetrating questions and debates actually

¹ If you are curious for more context about Educational Questions: EQ's are one of 4 types of Educational Questions. Here are the other three:

Leading questions (point to and demands a single correct answer, "In what year was the State of Israel founded?)

Guiding questions (steer but require some inference not just recall, "What prompted Rabbi Yochanan ben Zakkai to fake his death?")

Hooking questions (clever or playful openers/set inductions to engage learners, "What's better (or worse): a benevolent monarch or a callous elected leader?")

In all three cases, the intent is less to foster inquiry and more to point learners to content the educator wishes to underscore.

produce knowledge and understanding, that's how knowledge comes about...So we must give students work that enables them to have an 'Aha!' equivalent to that felt by the scholar who first came to the understanding." (UbD, 2005, pp.122-123)

Essential questions (EQ's) are types of questions that, "cannot be answered satisfactorily in a sentence...To get at matters of deep and enduring understanding, we need to use provocative and multilayered questions that reveal the richness and complexities of a subject. We refer to such questions as 'essential' because they point to the key inquiries and the core ideas of a discipline." (UbD, 1st ed, 1998, p. 28).

So, they are genuine questions that lack single definitive answers, meant to provoke critical thinking, spark connections to prior learning experiences and create opportunities for transfer of learning across situations and subjects. EQ's can be...

1. Overarching (general) or Topical (specific)
2. Academic (about the world) or meta-cognitive (about one's own thinking)

Seven criteria for a good EQ:

1. Is *open-ended*; that is, it typically will not have a single, final, and correct answer but rather cases are made for different positions.
2. Is *thought-provoking* and *intellectually engaging*, often sparking discussion and debate.
3. Calls for *higher-order thinking*, such as analysis, inference, evaluation, prediction. It cannot be effectively answered by recall alone.
4. Points toward *important, transferable ideas* within (and sometimes across) disciplines.
5. Raises *additional questions* and sparks further inquiry.
6. Requires *support* and *justification*, not just an answer.
7. *Recur*s over time; that is, the question can and should be revisited again and again.

Samples of Essential Questions: (developed for TWF Curriculum Design Study Group)

- When is it best to use Backwards Design? (overarching, academic)
- What design tools come most/least naturally for me? (topical, meta-cognitive)
- How might we determine the right balance between teaching learners to be consumers of knowledge, and becoming producers of knowledge? (overarching, academic)

Enduring understandings

Enduring Understandings, or "EUs", are big, bold, but concise content claims that require *uncoverage* and reside at the heart of one or more disciplines. At their best, they require extensive demonstration and experience for learners to understand and internalize. They are like the "thesis statements" of a curriculum.² "BUDi" is an acronym for 4 ways **EU's serve as filters for helping educators to select and articulate the most relevant and intellectually rich content when designing their learning programs:**

² EUs are the anchor of Backwards Design. Without idea-focused concepts, there will be no content, and a program likely becomes a haphazard crazy-quilt of activities, however engaging or unengaging, and/or there will be just unexamined content, with unexamined filters and unconscious criteria leading to a program whose parts are not aligned or coherent. No less than the quality and sophistication of the learning are at risk. If we neglect clear articulation of content choices, it's not clear what a course of study uniquely offers. Without EUs/clear content, we tend to focus only on "process"/activities and end up teaching solely for some vague sense of "identity formation" (an extremely slippery and inchoate target) without actually having made any clear choices and commitment to a particular content. It is best to choose carefully to do *fewer* things really well, which is infinitely better than doing a lot (or everything!) less well, or poorly.

Big idea?	The content claim is a big idea; it has value, significance and relevance outside the artificial classroom laboratory, and in the larger world. Guiding filter question: <i>Does this content matter outside of the classroom context, to real people out in the world, where there are hefty stakes involved?</i>
Uncoverage?	The content claim requires vital un-coverage. It is not obvious to the learner, and may be counter-intuitive, requiring plenty of examples, unpacking, and experiences, in order to understand and accept the claim the EU is making. (if it is a basic and apparent fact that can be explained in a sentence and accepted as true, it does not pass through this filter) Guiding filter question: <i>Is this content complex and surprising enough to require lots of explanation, experience, engagement, and experimentation to accept and internalize how it's true?</i>
Discipline/s?	The content claim lies at the heart of live debate among one or more disciplines or professional fields. (e.g., psychology, sociology, anthropology, rabbinics, political science, philosophy, history, literature, etc.) Scholars in that area are talking and writing about this content. Guiding filter question: <i>Is this content something that you could overhear some academics, experts, or professionals arguing about?</i>
Ideal citizen?	An ideal citizen/learner can be imagined in someone who internalizes the content claim and its underlying ethics and values. Ethics check: "It is no virtue to teach well what should not be taught at all." (Elliot Eisner) Guiding filter question: <i>Is this content worth teaching and worth teaching well?</i>

Sample EU's that pass through all the BUDi Filters (across various subject matter areas):

- Apologetics disturb critical readers. (literature, art, journalism,)
- You can know something without understanding it. (psychology, education)
- Our capacity for being vulnerable can never be greater than our willingness to be hurt. (adapted from Brene Brown: psychology, education, leadership)
- Second drafts tend to be messier than the first. (Aaron Henne: authorship, experimentation)
- Contact before content: relationships precede cognition and connection precedes correction. (education, online learning, leadership)
- In every era and place, Jews have had to navigate being a part of and apart from, their host countries. (history, sociology, identity studies)
- Maximum learning potential requires anxiety; not too much and not too little. (developmental psychology, education)
- The Israel of American Jews reveals more about American Jewish ideals than about the realities of Israel. (Jonathan Sarna: sociology, history, identity studies, educational tourism)
- Self-esteem comes from accomplishments, not compliments. (Ron Berger: psychology, education, supervision, leadership)
- It is impossible to tell if teaching goals are being met without learning outcomes. (education, psychology, social work)

Six Tips for Composing Powerful EUs that pass through the BUDi filters:

- A great EU makes a bold and intriguing claim, like thesis statement of an essay. Both EUs and theses need to be supported with evidence to prove the claim. In a curriculum, the various activities and assessments are where the proving takes place.

- A great EU is crystal clear to readers outside of your head. Vague language is not the same thing as needing uncoverage.
- A great EU works best when it is able to say a lot leanly, without extraneous phrases that do not contribute to the Big Idea (that tend to clutter or eclipse it).
- A great EU *tends* to have a strong connecting verb (not “is/are”) which demonstrates how two or more concepts of a content area are in dynamic and dramatic relationship with one another in sometimes unlikely, counterintuitive, surprising ways that require uncoverage.
- A great EU is exclusively about content not about the process of teaching the content. Therefore, it should neither be conflated with a Teaching Goal nor a Learning Outcome, which involve what either teachers or learners do. An EU is exclusively focused on subject matter and stems from scholarly or expert knowledge and wisdom.

Learning outcomes

Learning Outcomes are what the learner-participants will actually be able to do as a result of their participation in a given program. They describe what learners should be able to **know, do, or be** as a result of the engaging in the curricular experience, and not what the *teacher* hopes to transmit (which are Goals). As such, Learning Outcomes are written from the *learners’* perspective:

“At the end of this program [or session, workshop, institute, etc.], learners will be able to...”

Sample Learning Outcomes (developed for various real and theoretical TWF programs):

At the end of X, learners will be able to...

- Recall the three stages of Backwards Design (Remember)
- Recognize definitions of “collaboration” that come from the Harvard Kennedy School. (Observe-Explain)
- Distinguish between Goals and Outcomes (Analyze)
- Use one or more insights from a case study to determine a strategy for a real-life dilemma in their work. (Apply)
- Use Backwards Design tools to review a past program (Apply)
- Compare and contrast the philosophy and practice of Pluralism at TWF to that of 2 other organizations. (Analyze)
- Share one way they can support their colleagues during zoom meetings. (Empathize)
- Determine which art submissions belong on the values page of TWF website. (Evaluate)
- Survey TWF network members to determine what types of online learning content are desired (Inquire)
- Develop a pilot SRE program (Create)
- Consult to a colleague on their design process for a program of their choice using a conscious combination of *feedback, guidance, and support*. (Empathize, Apply, Evaluate, Create)

To date, psychologists and educators have been able to point us to 8 interdependent and overlapping core thinking behaviors below that we use to attain understanding³. Educators plan for participants to

³The first six stem from Benjamin Bloom’s taxonomy and the other two stems from the *Making Thinking Visible* team at Harvard Project Zero:

Krathwohl, David R. (2002) “A Revision of Bloom’s Taxonomy: An Overview,” in *Theory into Practice*. Volume 41, Number 4: College of Education, The Ohio State University. Pp. 212-218.

Ritchhart, Ron, March Church and Karin Morrison (2011) *Making Thinking Visible: How to Promote Engagement, Understanding and Independence for All Learners*. San Francisco, CA: Jossey-Bass.

engage in a rich range of these behaviors⁴ during an educational experience to maximize deepest growth and learning potential.

Remember: identifying and recalling information

Observe-Explain: noticing closely and describing what you see, selecting for what matters

Apply: putting facts, rules, and principles to use

Analyze: separating a whole into its constituent parts, clarifying their relationship

Evaluate: developing opinions, judgements or decisions

Create: combining ideas to invent a new whole

Empathize: considering different viewpoints than one's own, take on different perspectives

Inquire: exploring with curiosity, gaining clarity and checking assumptions

⁴For a chart of suggested language for crafting strong Learning Outcomes, refer to "Formulating Learning Outcomes."

STAGE 2: ASSESSMENT EVIDENCE

Assessment evidence is the proof in the pudding of whether learning is, or is not, taking place, including both intended and unintended outcomes. Educative assessment is a cyclic process of:

- a. *gathering and discussing information from multiple and diverse sources,*
- b. *in order to develop a deep understanding of what learners know, understand, and can do with their knowledge as a result of their educational experiences;*
- c. *the process culminates (and repeats) when assessment results are used to improve subsequent learning.*

Assessment artifacts are not the conclusion of the curricular meal. Rather than saving them for a grand reveal at the end as if learning only happens in a final unit or lesson, educational assessment is the thread that is woven through learning that allows the educator to monitor what is being learned along the way, and to what depth. These can be thought of as “building block assessments.” Major, holistic projects that draw upon the range of skills, knowledge, and attitudes being taught are called “authentic assessments,” and should be introduced right up front and participants should know from the beginning what they are being invited to produce, and why. See below for what makes “authentic” assessments, authentic, and why they are so critical for deep learning.

Sample Assessments (developed for various TWF programs):

- “Ed’s Power Tools” Matching Challenge (building block assessment; opening session of Curriculum Design Study Group, 5-10 minutes)
- Select any program of your choice that you wish to develop or revisit, and create a page of notes generated from a group consultation in which the draft is workshopped (authentic assessment; Curriculum Design Study Group sessions, 45-60 minutes)
- Post in the chat one thing that you heard today that you want to tell someone else you know (building block assessment; closing prompt after TWF wide event about the Charlottesville case with Integrity First for America, 2-3 min)
- Video recording (or notes recorded) of role-play between instructor and volunteer participants, followed by invitation for whole group to analyze and reflect on what they heard and saw (building block diagnostic assessment; early in an online Leadership Summit session with Monica Higgins, about 7-10 min)
- Create an intervention of any kind in a community of your choice, in a team of your choice, to help narrow the gap in Gender equity and/or safety between men and women (Authentic assessment; Gender Summit, 1 year+)

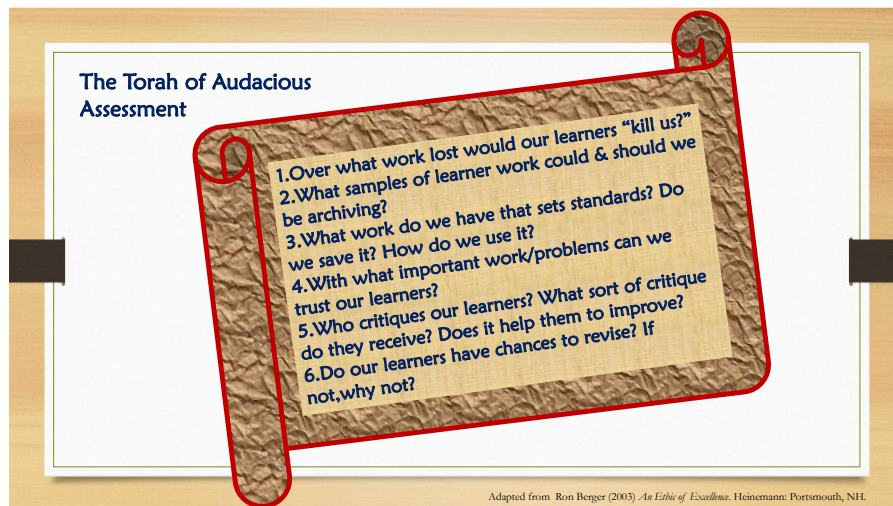
WHAT MAKES “AUTHENTIC ASSESSMENT” AUTHENTIC?⁵

These are assessments that inspire and challenge students, which require care and creativity; assessments in which discrete skills are embedded within larger multi-disciplinary projects that are part of real life. They are often part of thematic curriculum designs that go on for weeks or months at a time. The projects are the primary framework through which skills and understandings are

⁵ Collected, slightly paraphrased statements from Ron Berger’s (2003) *An Ethic of Excellence*

learned. They are not extensions of the curriculum or extras when the required work is done. They are themselves at the core of the curriculum. In the course of a thematic study there may be several significant projects, most of which require research, writing skills, drafting skills, and sometimes mathematical or scientific skills. In the course of these projects there are usually traditional instructional sessions for skill and knowledge acquisition.

The **difference** is that these skills are put to immediate use in the service of an original project with high student investment. Moreover, there's a reason to do the work that way; not just because the instructor wants it that way. Whenever we are assessed in work and life, it is never based on artificial tests that are decontextualized from lived reality. Rather, we are assessed by our accomplishments and our character. Authentic assessment also determines excellence in these real-life ways. Ultimately, it seeks to build connoisseurs – people who have internalized what counts as excellent work and behavior. They can identify beauty of all kinds and can explain why something is beautiful and excellent. If the educator has answers to these questions, their assessment is likely authentic:



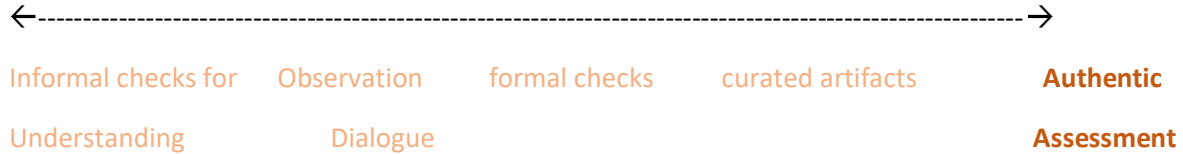
We can therefore think about assessment tasks in two distinct categories:

WHAT ARE THE *MEANS*? WHAT ARE THE HIGHER *ENDS*?

BUILDING BLOCKS assessments: are the means to the authentic end, and include individual skills, knowledge concepts, and attitudes needed to acquire in order to perform a higher end, complex, authentic task. They are discrete exercises, such as oral or written prompts, analyzing something read, practicing a skill (such as piano skills, language drills, math flash cards, games that teach and/or review relevant terms or concepts, observing examples of best (and worst) practice in the field, etc...)

AUTHENTIC ASSESSMENT: is that higher end and is a contribution to an actual problem or a consequential response to an actual dilemma/question, in a real community. It might be a solution where relevant or possible (like a vaccine or a cure) but often is a way of managing a large ongoing problem, such as a gender inequity intervention towards narrowing the gap. It might also be a new technique developed for fostering pluralistic discourse and practice on an organizational board.

MEANS TO ENDS EDUCATIONAL ASSESSMENT CONTINUUM



Building block assessments typically: require use of specific, isolated items or skills; often require correct responses; unknown in advance; disconnected from real-world context and constraints; and are one-shot, artificially constructed instruments intended to provide a formative snapshot of performance/understanding.

Authentic assessments are based on relevant, real world needs and problems, for which something genuine is at stake....

SEVEN CRITERIA FOR AUTHENTIC ASSESSMENT⁶:

1. The task is challenging and involves a set of constraints likely to be encountered by actual citizens, community members, experts, professionals, etc. Put another way, **the task asks the student to “do” the subject** and replicates key challenging situations in which we are “tested” in the workplace, in civic life, and in personal life) **So the “world” judges (assesses!) success more than the educational leader.**
2. **Requires judgment and innovation** (assesses whether student can explain, apply, self-adjust, or justify answers. Builds in the chance to explain why they did what they did, their support for the approach or response, and their reflection on the result (that we may gain fuller insight into their degree of understanding).
3. The tasks, criteria and standards by which the work will be judged **can be determined in advance** (e.g., local contaminated well, gender inequality, a recital, a play, a broken watch, a research proposal, a d’var Torah)
4. The task is **multi-faceted** (assesses the student’s ability to efficiently and effectively use a repertoire of knowledge and skill to negotiate a complex and multistage task; requires problem clarification, trial and error, adjustments and adaptation). Is not limited to one subject matter area but rather requires an inter-disciplinary approach.
5. The task **evokes student interest and persistence**
6. Allows appropriate **opportunities to rehearse, practice, consult resources, and get feedback on and refine** performances and products (assessment is designed to ultimately improve further performance).
7. It builds in the **chance to explain why they did what they did**, their support for the approach or response, and their reflection on/analysis of the result (that both learner and educator may gain fuller insight into the degree and nature of understanding).

⁶ Adapted from Wiggins, Grant and Jay McTighe (2005) in *Understanding By Design. “Thinking Like an Assessor” (Ch.7),* Alexandria, VA: ASCD, pp. 146-171; and, Cooper, James M. et al, ed’s (2006) *Classroom Teaching Skills (8th Ed).* Indianapolis: Houghton Mifflin.)

AUTHENTIC ASSESSMENT THEREFORE INVOLVES⁷...

(key questions for educators in parentheses)

1. Tasks that are authentic to world outside of the “laboratory.” (What is authentic?)
2. Tasks that value thought *processes*. (How to show work?)
3. Tasks that reflect the values of the intellectual community it comes from. (What are those values?)
4. Tasks that include group not only solo efforts. (What collaboration is needed for full learning?)
5. Tasks that allow for multiple legitimate solutions and answers. (Are any illegitimate?)
6. Tasks are relevant to the curriculum but not limited to it. (How much, to what extent can the “real world outside” be let in to the “classroom laboratory?”)
7. Tasks that emphasize ability to address forests not only trees. (How to widen the data relevant to solving a problem so students can find “best fits” to problems?)
8. Tasks that allow students to choose mode of representing what was learned. (How to allow for each student to express/share what they learned in distinct ways that reflect their unique learning style, voice, etc.?)

⁷ Adapted from curriculum theorist, educational philosopher and scholar, Elliot Eisner, *The Educational Imagination* (Pearson, 1994; revised 2001)

STAGE 3: PLANNING LEARNING ACTIVITIES

At this point, with the design choices you have made in Stages 1 and 2, you can now conclude with the step where most people begin: *planning the learning activities* that you want to offer your participants. That's what makes Backwards Design, "backwards." You have reverse engineered the desired growth or changes in thought, behavior or attitude that you desire for your learners. Knowing clearly and articulating as precisely as possible what those specs are in advance enables you to maximize the time you have with your learners. Since that time – whether it is an hour or a year or 2 years – somehow always tends to feel limited or insufficient for what we'd really like to accomplish, beginning with the end in mind increases the chances that we are engaging learners in ways that are directly and explicitly aligned with our desired goals, content (EUs), and critically, with our learning outcomes and assessments. Backwards Design also allows us to keep track of what works, what are the unplanned outcomes, and how we can learn from both.

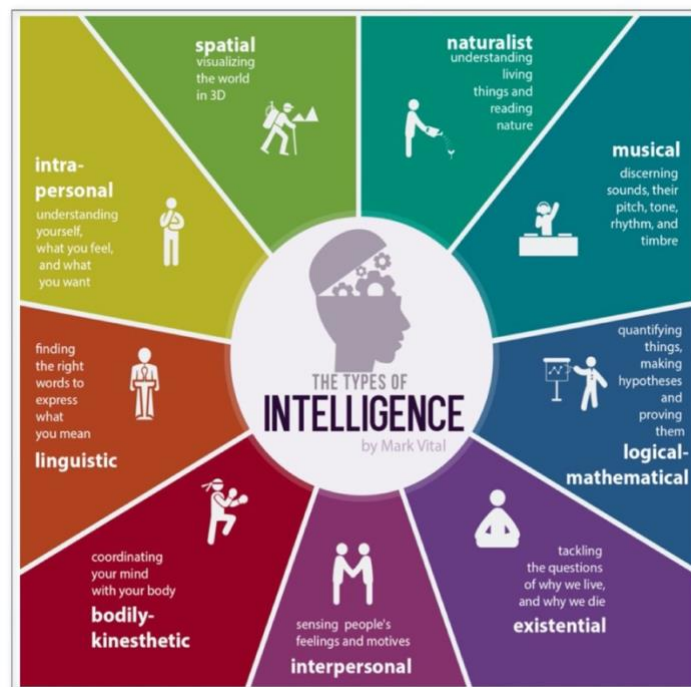
Most concretely, the learning plan is your outline that describes how you will help learners achieve the outcomes you have determined are most important for this particular program, within the time allotted. This outline can take many forms, and at TWF it often takes the form of an ISB. Whatever it looks like, a learning plan generally describes the **order, length, and pacing of the activities** you design for your participants. If it would be useful, feel free to use and/or adapt the sample template below for planning programs using the Backwards Design model. Note that the Stage 3 activity planning section is in the order you would *use* it when teaching, not in the order in which you would develop it. For example, the Set Induction is taught first but often developed last, when it's clear what the whole session includes.

A Backwards Design learning session (Stage 3 design) ideally includes the following five parts:

- **Set Induction:** a very brief but critical teaching move that helps learners increase their ability and desire **to transition** from whatever they are coming from to wherever you wish to be taking them (see "Set Inductions and Educational Closures" for a quick how-to)
- **List of your activities:** each described with a realistic **timeframe** noted, and **sequenced** in the order you believe makes the most sense for the learners in which to learn it, given your goals and outcomes; **described** with enough detail that someone else could lead the session, and **varied** in their modalities to address (and ideally even meet) the needs of all learner types at some point, to some extent (e.g. using 3+ modes in the Multiple Intelligence diagram below can enormously increase the creativity and variety for your program's learning modalities)
- **Educational Closure:** Educational Closure is also a brief but important teaching move that provides participants with a chance to connect some dots of the session, particularly relevant to them. As such, it is done *by the learners, for the learners* and not an educator's summary of the session.
- **List of Materials & Resources Needed:** This can be a list and possibly also include an attachment of the actual materials and resources needed to lead the program, such as any and all source sheets, handouts, supplies, links, references, equipment, etc.
- **Post-Program Reflection Notes:** Although the natural rush of moving on to the next thing can shortcut this step, even scribbling down a phrase or bullet point within a day of leading a program, can be enormously generative and help you as the educator learn better and faster about your craft. The more formal TWF practice of reflecting collectively as a team after a Summit, for example, is a powerful practice that invaluablely informs the next cycle of planning.

SAMPLE BACKWARDS DESIGN PLANNING TEMPLATE (ALL 3 STAGES)

Stage 1 Design:	
Teaching Goals	<i>To teach...</i>
Enduring Understanding/s guiding this lesson	
Learning Outcomes	<i>At end of this session, participants will be able to...</i>
Stage 2 Design: Assessment	
Stage 3 Design: The Learning Plan	
Hook (Set Induction)	
Activities Sequenced, Timed, Varied (scripted where relevant/necessary) & Non/Digital Tools selected	
Educational Closure	
List of Materials & Resources Needed	
Post-Program Reflection Notes	
What did we notice that worked?	
Any surprising/unplanned outcomes?	
What did we learn?	



Finally, *Understanding by Design* authors Grant Wiggins and Jay McTighe developed this “WHERE TO” acronym as a mental checklist for helping educators to develop rich, creative, engaging, aligned learning plans:



Where is the learning going? (and why) Have you communicated this to your participants/learners?

Hook the participants/learners and hold their interest beyond. (see “Set Inductions & Educational Closures”)

Explore and **E**quip: Do your participants have multiple chances to experience and explore key ideas through as many senses as possible?

Rethink and **R**evise understandings: Do they have a chance to reflect on their progress, revise their work?

Exhibit & **E**valuate – Have you built in opportunities for participants to self-assess their work and its implications?

Tailor to different needs, interests, styles: Have you addressed the unique motivations, learning types of everyone in the group? (e.g., refer to Gardner’s learning modalities diagram above)

Organize for maximum engagement & effectiveness: have you been intentional about the sequence and the scope of the activities, to achieve deep understanding not just superficial coverage?