I am the change

Recycling in Austin: A step towards zero waste policy

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1 Overview

The world in general is trying to be environment friendly these days. Renewable sources of energy is a hot topic[1]. In fact, there is a large energy group in UT Austin, working towards efficient energy management[2]. Evidently, we're all working towards a better, and cleaner, environment. But how can we achieve this seemigly difficult feat? It's not so difficult.

Actually, even seemingly small inputs by individuals can contribute a lot to making our environment cleaner. Recycling, composting and proper waste segregation is one such initiative that cities, small communities, families and individuals can participate in.

Though such initiatives are very common in most cities in USA, they don't always fuction to maximum benefit. Here, we examine a methods through which this can be addressed.

2 Needs Assessment

Instructional Designers are often called upon to provide an instructional intervention. As good designers, we need to make sure that instruction is, indeed, required in a particular situation. We **first examine the problem**, and **make sure the sources of the problem is identified**. We then **decide if instruction would be an apt solution for the problem**, or if the solution is simply changes in access to resources, or something else entirely. Also, **we define our goals** so that it's easier for us to describe and define paths that lead towards them. Here, I document how and why an Instructional intervention will solve the problem that has been presented to me.

2.1 Identifying the 'real' problem

In June 2015, Austin Resource Recovery reported that 44% of waste can could have been recycled, was actually thrown in trash. The monetary value of this amount of waste is a whopping $4.7 million (last year alone). The actual volume of this could-be-recycled trash is a 58,000 tons. All of this goes in landfills unnecessarily, and the quantity is enough to fill the UT tower twenty-nine times![3]

Austin Resource Recoverys Director, Bob Gedert, says "Austinites, it is up to you to make Zero Waste a reality for our community. Every bit counts. Get your families involved and make sure you develop good recycling habits in your homes"

So, zero waste seems to be an ideal situation that everyone wants. But why aren't people actually recycling well? A small independent survey conducted for the residents of Austin (n=38) revealed that the main reasons for this, in order, are:

1. Residents don't know what can be recycled and what cannot
2. Residents often don't have time, or they forget
3. Residents don't have access to recycling bins

Also, an overwhelming majority of the people indicated that if indeed they know all the things that could be recycled, they would do it properly.

2.2 Does the problem have an instructional solution?

Problem 1 of residents not knowing what can be sorted as recycling definitely has an instructional solution. Since the things that can be recycled are often confusing to sort (as indicated by our survey) having a one-time training course on waste segregation will help a lot in overcoming this difficulty.

Problem 2 can tried to be minimised by presenting tips and tricks to save time while recycling. Also on the survey, people indicated that recycling would essentially 'make them feel good' and 'it saves the environment'. One hopes that these two factors could outweigh the problem of not having enough time. Relationships between environment and recycling will be focused on in the instruction.

Problem 3 is actually a very interesting one. By October 2016, it's mandated that all multiple family properties (apartments, residential complexes, dorms, etc) need to have access to recycling bins[4]. It is important to make residents aware of this fact, as theyd be able to demand access to bins, if they aren't provided with one. In this case also, an informative instructional intervention will be beneficial.

So, overall, the problems seem to be able to be addressed by instruction.

2.3 Instructional Goals

1. 95% will be able to **distinguish** the items that can be recycled from landfill items, when presented with a list of usual household waste. (**Gagne's Intellectual Skills**)
2. 90% will be able to **execute** the proper method of disposing the recyclable waste. (**Gagne's Motor Skills**)
3. 90% will be able to **choose** a recycle friendly product(s) from a non recycle friendly products(s), when presented with a shopping cart choice. (**Gagne's Attitudes**)
4. 90% will be able to **contact** authorities who can help them get an access to recycling bins. (**Gagne's Motor Skills**)
5. 90% will be able to **identify** the differences in impact on the environment of recycling vs not recycling. (**Gagne's Intellectual Skills**)
6. 90% will be able to **choose** methods that would help them make recycling more efficiently and can allot time in their schedules for this. (**Gagne's Attitudes**)

3 Instructional Analysis

Since the goals have been decided, the next step is to see *h*ow to reach those goals, and the background constraints and conditions that will affect this process. In this section, I examine the **context** of our design and learning environment, the nature of our target **learners** and how well I can present our **content** so that these three areas can align well to maximum benefit. I also want to make sure the content is presented such that it matches the main purpose of our goals.

3.1 Context Analysis

The following instructional intervention is being created to reinforce good recycling habits in the residents of Austin. I plan my instructional product keeping in mind the timeframe, resources available, nature of learning evironment and so on. See the table for an elaborate analysis of the given context.

Context concern	**Understanding and addressing the concern**
Timeframe for design, materials production and evaluation of instruction	The time available is around two months for the development of the instructional material. After learning from the instructional material (which may approximately take two days) learners are expected to be able to apply the knowledge immediately, Evaluation could take around two weeks' time. All would be well within the available timeframe for developing this instructional product
Access to domain area expertise and steps required to achieve goals	There are many informative websites, games, and city of Austin's official web pages that talk about recycling[5]. The data available will be more than sufficient to achieve the instructional goals. Unfortunately, it isn't comprehensive and is not well organized. As a designer, one hopes to access all this data and present it well, for a good learning experience.
Delivery mechanism and location of instruction	The instruction will be delivered online, through an interactive tutorial. Adobe Captivate 7 will be used for this purpose, and access is easy for the designer. Learners can access the tutorials through their PCs, laptops or tablets. The location of the instruction could be any place that has good internet access. It could be at home, at schools to foster recycling habits from a young age, at apartment complexes for residents' benefits, at college dorms to minimize wastage, and so on. This makes it easy for learners to access the tutorials at a comfortable time, place and pace.
Support for learned material	Since the instruction aims at changing an individual's habits and practises, not much institutional support is required. WiFi or internet acess, and access to a computing device, is required. Access to Recycling bins and other related waste disposal resources are also required. As mentioned earlier, this problem will hopefully be addressed by the individuals themselves, once they go through the tutorials.
Timeframe of application of newly learned skills and attitudes	The learner can start practcing the newly learned skills and accquired attitudes from 'Day 1'. This would foster the knowledge, attitude and skills retention capacity of the tutorials
Relevance to real world context	Since the learner can apply the skills in everyday life, s/he will appreciate it. Applying the learned skills and attitude changes will help learners address the very important issues of resource wastage, environmental pollution, monetary damages and time management. Thus, they will be involved in a very relevant situation from day one

3.2 Learner Analysis

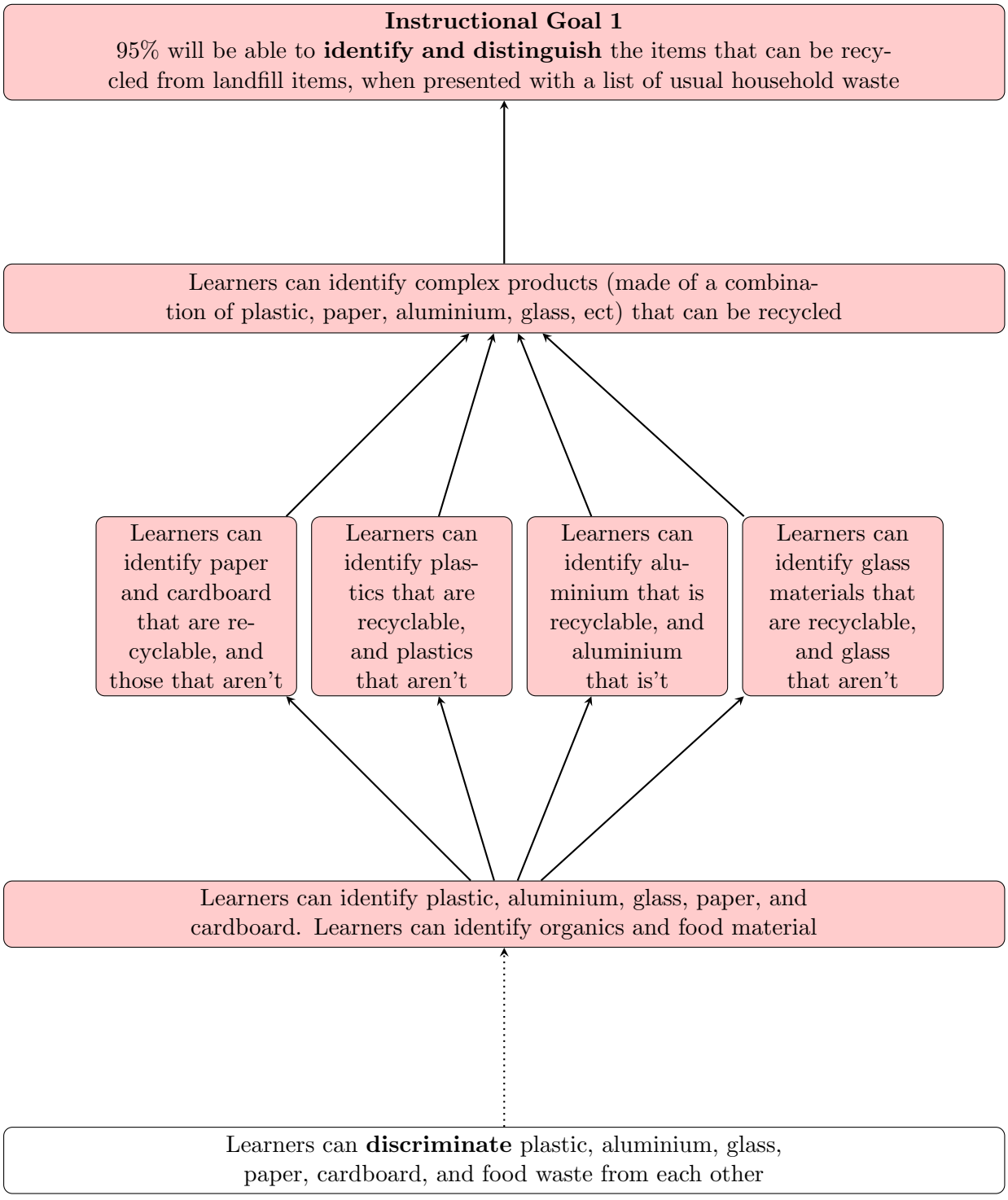
Understanding a client(learner) for whom we intend the product for, is very important. Unless we understand the physical, mental and emotional status of the learners, it'll be very difficult for us to effectively design something that will both appeal to them, and be useful to them. We also look at similarities or diffreneces between the learners, and see if those issues can be

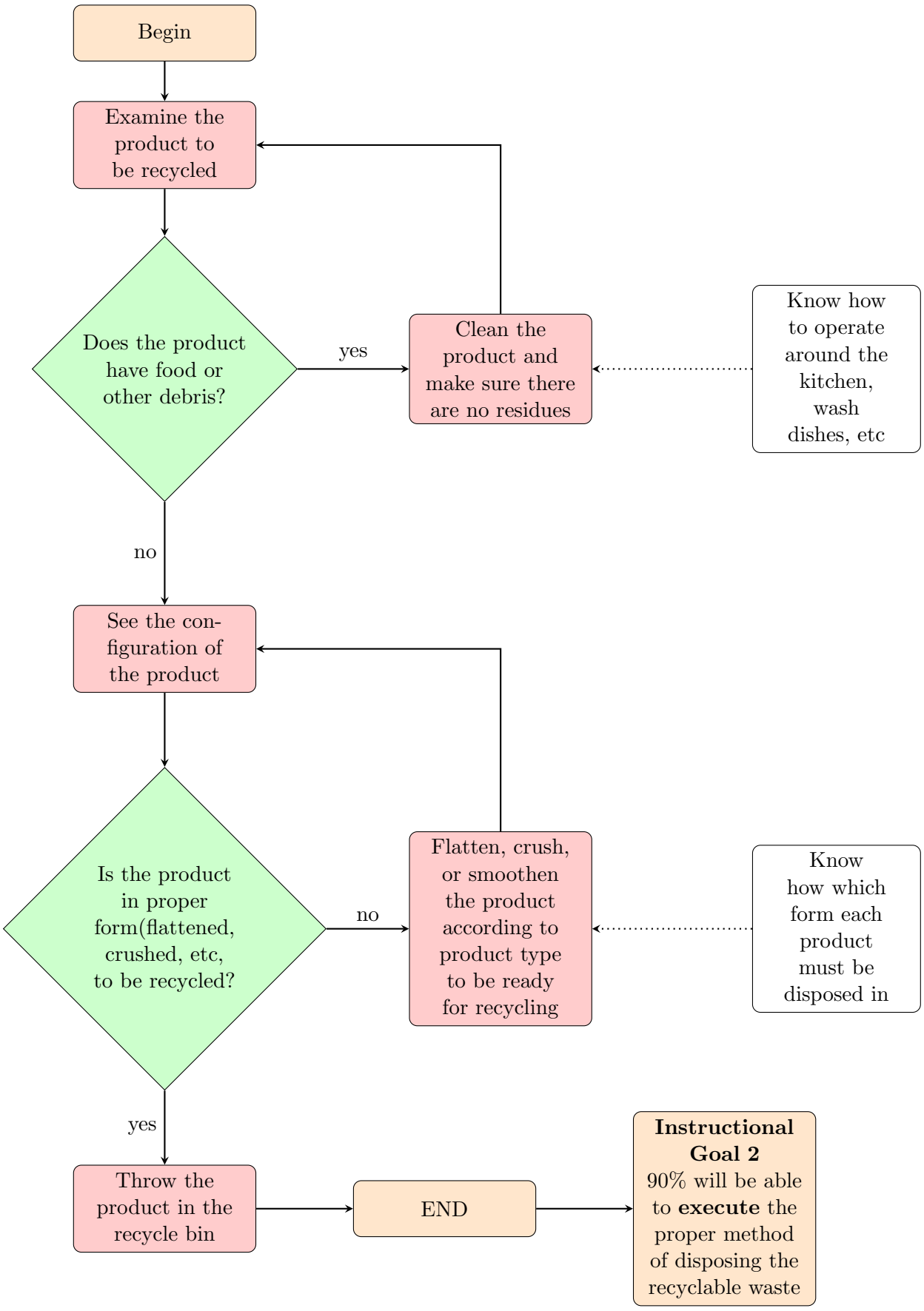
addressed well. We ultimately hope to cater as best as we can, keep in mind all aspects of a learner's characteristics. Please see the following table on an elaborate analysis.

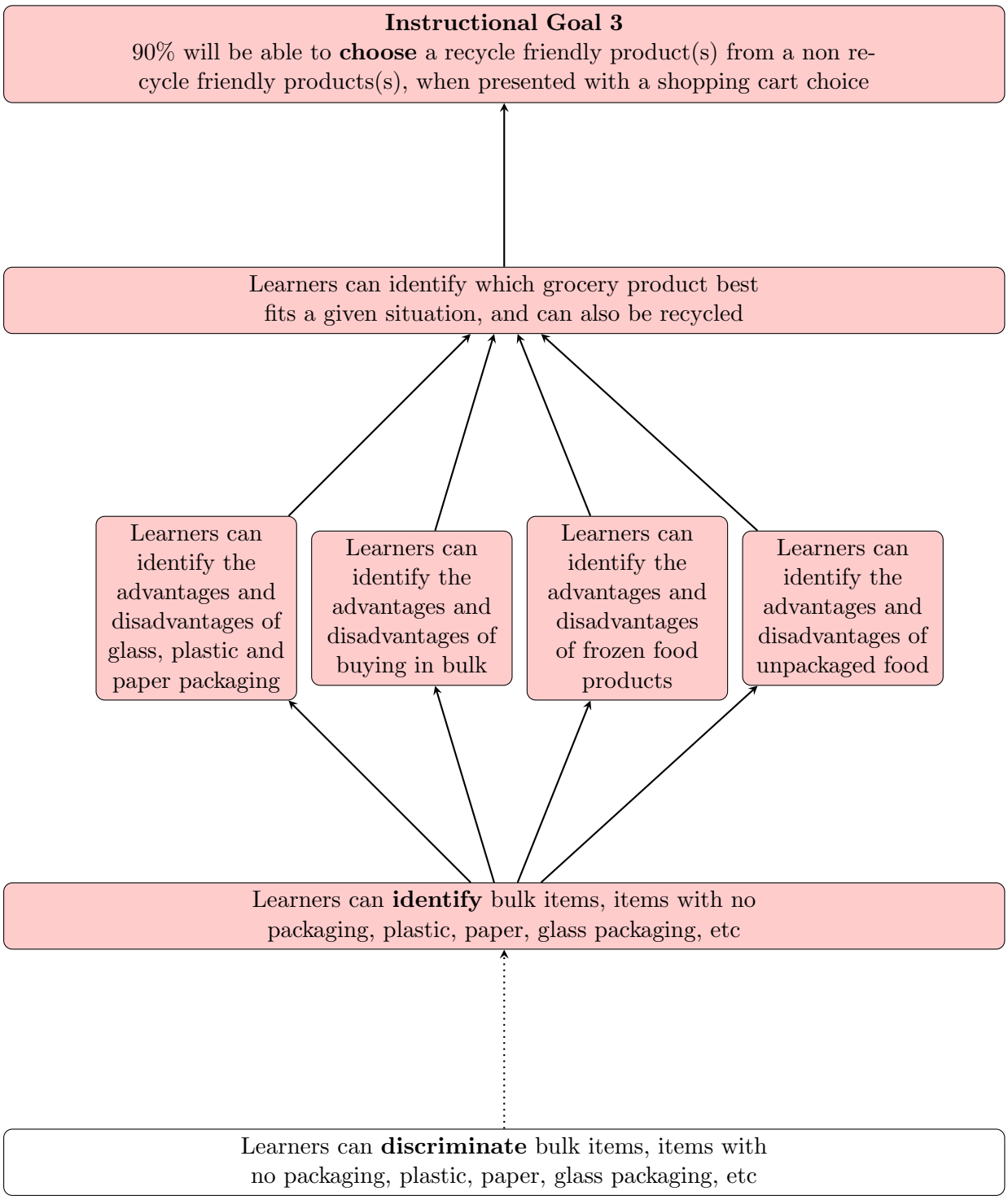
Learner characteristics	**Understanding and addressing the characteristics**
Age and developmental level	The target learners are the residents of Austin. The tutorials are primarily targeted at an audience that is older than 12 years of age. Most people over the age of 12 these days are comfortable navigating around a tablet or computer, comfortable with typing. We hope they can spend at least half-an-hour at a stretch on an e-learning platform. Care will be taken to make sure the modules aren't longer than half-an-hour to account for attention span of this age group. We also hope they will be comfortable with a self-directed, interactive and self-paced tutorial. Workshops and group training sessions can be held in apartment complexes, dorms, etc if required. This may aid learners who aren't very used to learning solo. No domain knowledge is required to run a group training session.
Reading level	We wish to address everyone over the age of 12. The training material will not be much more than a Grade 5 reading level. It will also be presented in a way such that it's interesting to even older adults.
Experience with content area	No knowledge of recycling methods or its advantages is required. As observed from our survey, many residents didn't know the techniques very well. Thus, almost anyone over the age of 12 can use this tutorial to a good extent. Even people who already have some knowledge about recycling would benefit from these tutorials.
Physical impairments	Since the training can be done at any place, even learners with reduced mobility can access the instruction. Unfortunately, however, since visual cues will form a major part of the tutorials, learners with sight impairment will not be able to use to to full extent. After beta testing and pilot studeis, transcripts will be added, to aid hearing impaired learners.
Primary and Secondary Language	The primary language of instructon will be English, as that would address a large section of Austin's residents. If the pilot study goes well, the translation to Spanish will be considered.
Cultural and Social Background	The learners will be from a diverse cultural background. Some may not be familiar with the US method of waste disposal. Hence, everything will be introduced from the basics. No culture specific jokes, sayings or scenario will be used. Generic examples will be used, but Austin's culture will also be kept in mind. This will help learners who are new to the place get adjusted to the lifestyle here. This would also appeal to Austin natives and keep them engaged.

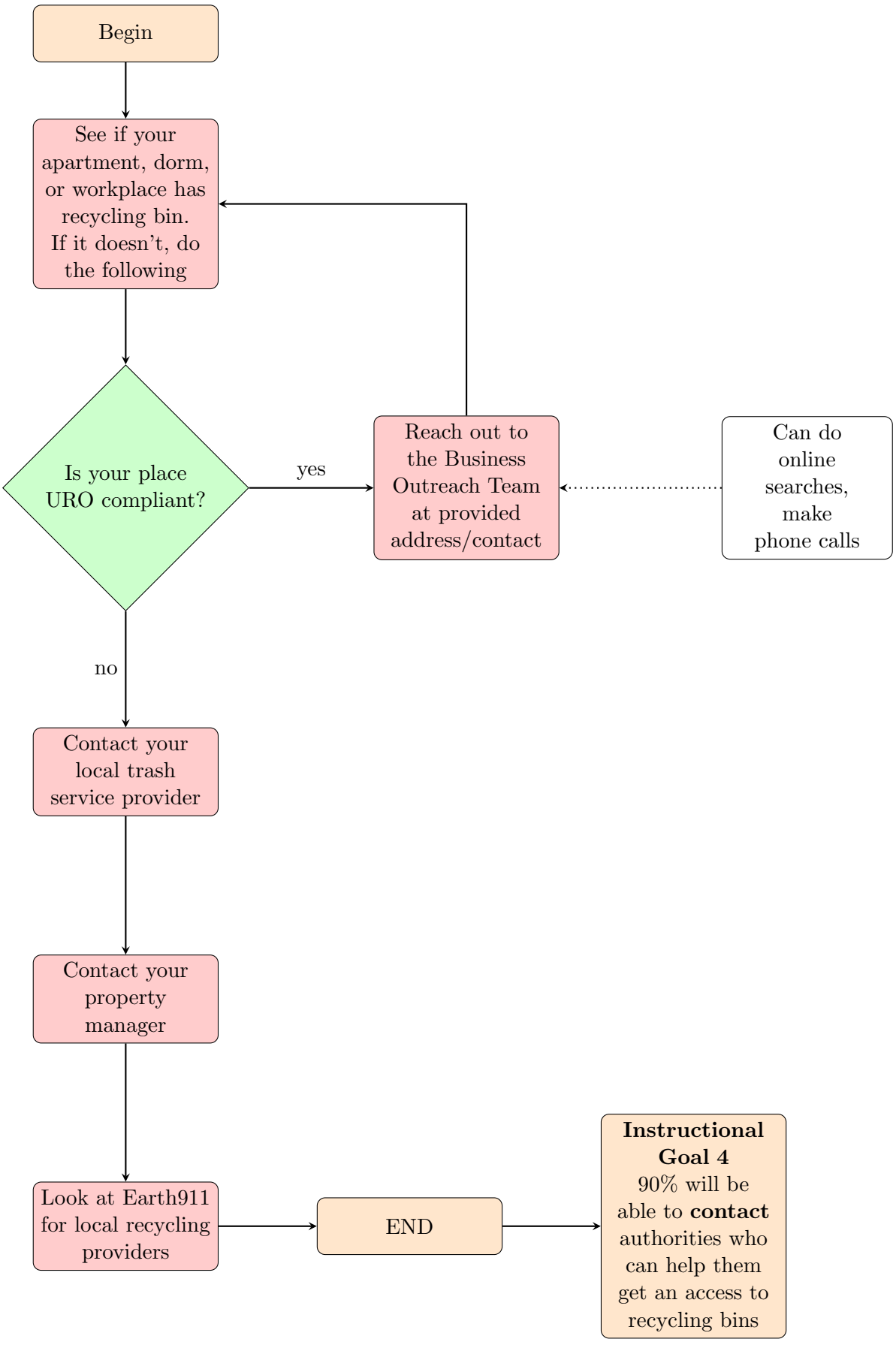
3.3 Content Analysis

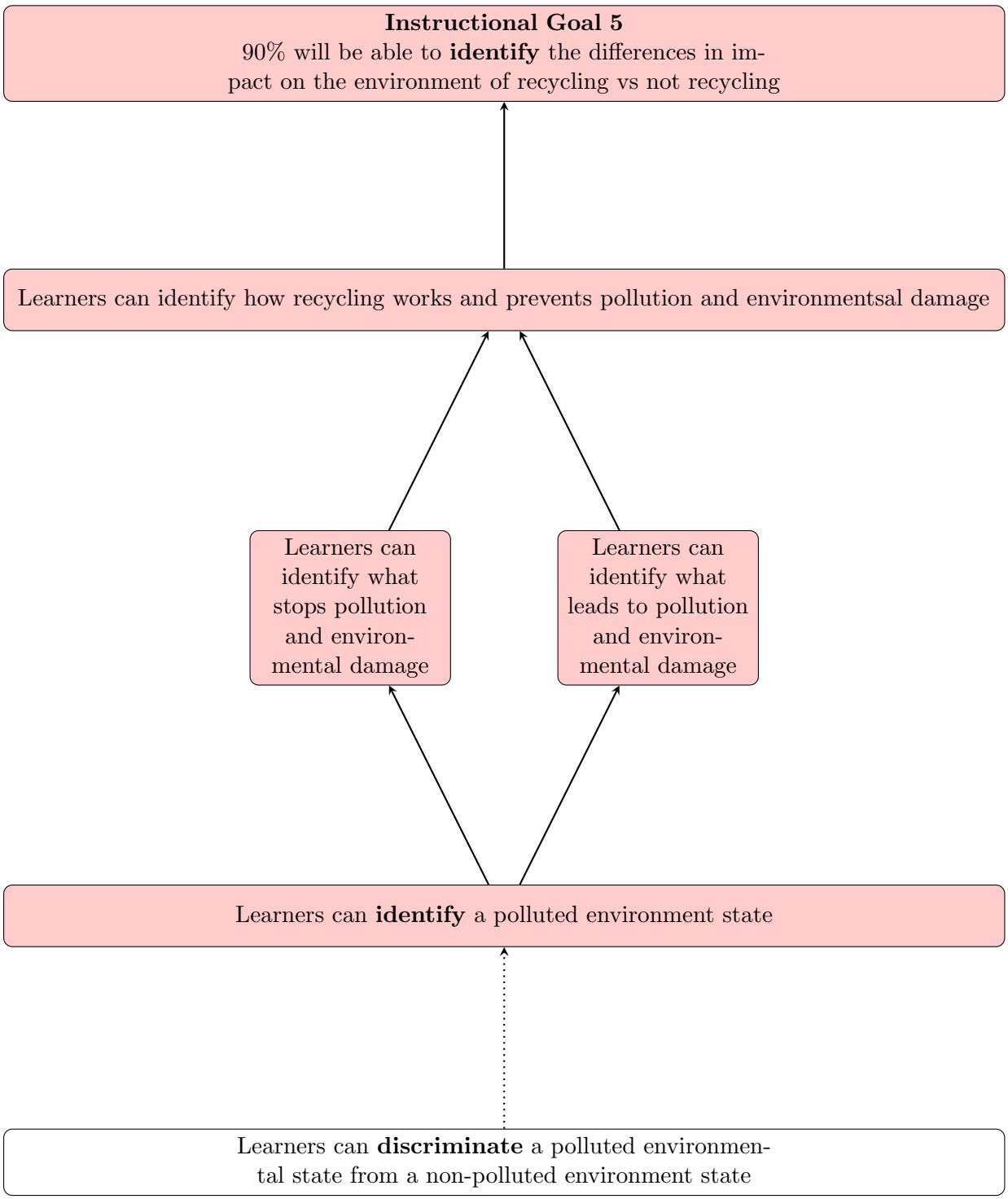
Here, I try to design sequences and steps that will be appropriate for the type of instructional goal we want to achieve. I do this sequencing of learning skills depending on the 'learning type' that each of our goals falls into. Some sequences may need some pre-requisite knowledge. I have also included that in my design (white boxes). Please see the flow charts that follow to see how I plan to deliver instruction.

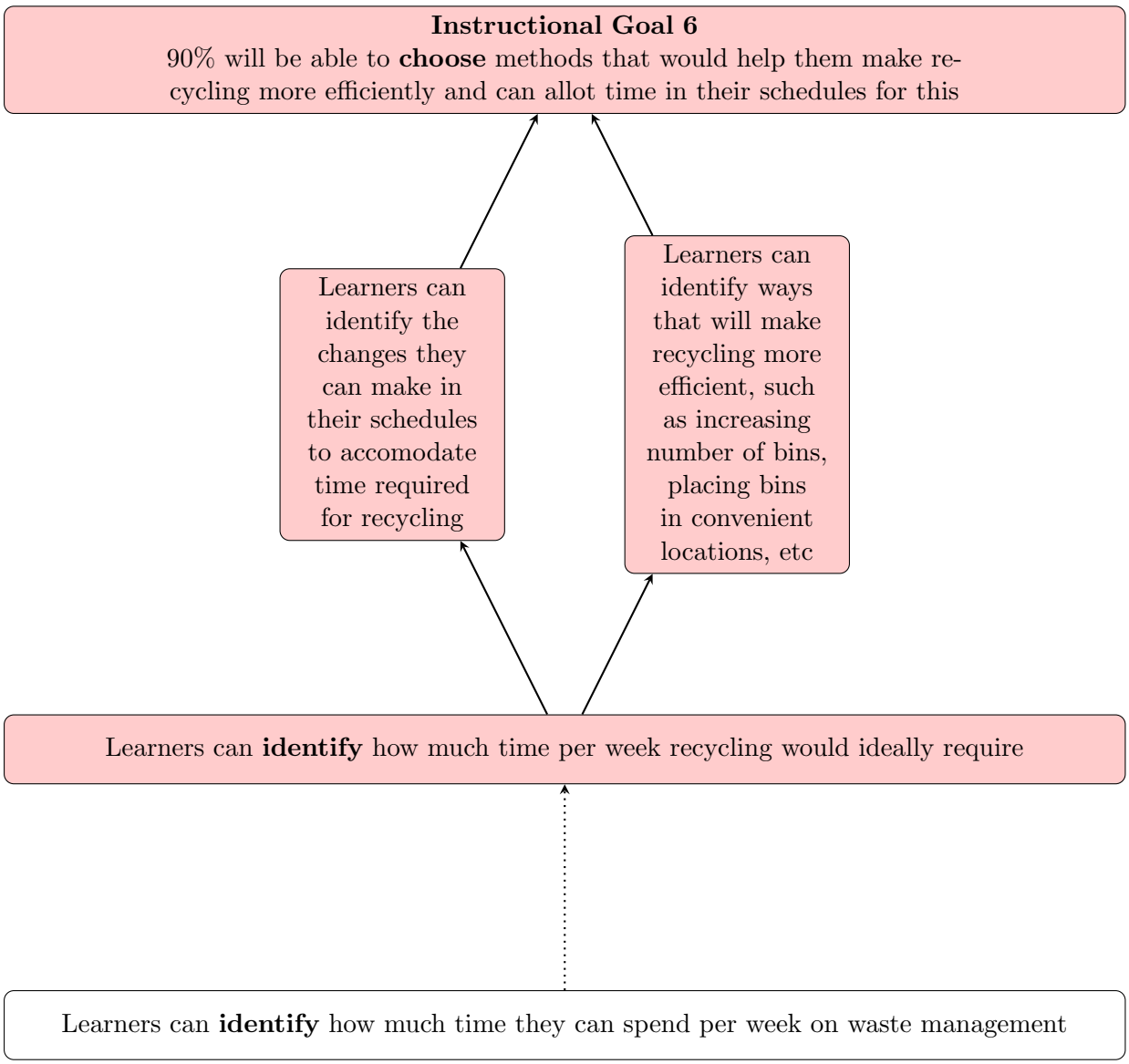



Begin
Examine the product to be recycled
Does the product have food or other debris?
yes
Clean the product and make sure there are no residues
Know how to operate around the kitchen, wash dishes, etc
no
See the configuration of the product
Is the product in proper form(flattened, crushed, etc, to be recycled?
no
Flatten, crush, or smoothen the product according to product type to be ready for recycling
Know how which form each product must be disposed in
yes
Throw the product in the recycle bin
END
Instructional Goal 2
90% will be able to execute the proper method of disposing the recyclable waste


Instructional Goal 3
90% will be able to choose a recycle friendly product(s) from a non recycle friendly products(s), when presented with a shopping cart choice
Learners can identify which grocery product best fits a given situation, and can also be recycled
Learners can identify the advantages and disadvantages of glass, plastic and paper packaging
Learners can identify the advantages and disadvantages of buying in bulk
Learners can identify the advantages and disadvantages of frozen food products
Learners can identify the advantages and disadvantages of unpackaged food
Learners can identify bulk items, items with no packaging, plastic, paper, glass packaging, etc
Learners can discriminate bulk items, items with no packaging, plastic, paper, glass packaging, etc


Begin
See if your apartment, dorm, or workplace has recycling bin. If it doesn't, do the following
Is your place URO compliant?
yes
Reach out to the Business Outreach Team at provided address/contact
Can do online searches, make phone calls
no
Contact your local trash service provider
Contact your property manager
Look at Earth911 for local recycling providers
END
Instructional Goal 4
90% will be able to contact authorities who can help them get an access to recycling bins


Instructional Goal 5
90% will be able to **identify** the differences in impact on the environment of recycling vs not recycling
Learners can identify how recycling works and prevents pollution and environmentsal damage
Learners can identify what stops pollution and environmental damage
Learners can identify what leads to pollution and environmental damage
Learners can **identify** a polluted environment state
Learners can **discriminate** a polluted environmental state from a non-polluted environment state



4 Instructional Design Objectives

As an Instructional Designer, I have to make sure that the post-instruction performances(behavior after instruction or target behavior) of my learners align with both instruction and assessment methods. I concentrate on the desired behavior, conditions under which the behavior should be observed, and the criteria or degree that should be matched for the behavior to be considered valid (not random occurance). Here, I list all by desired targets and align them with an appropriate assessment and assign a performance level indicator. Please see the table given in the next page.

Target Behaviour	Action	Assessment	Performance Level
Learners can distinguish items that can be recycled from landfill items	Learners identify a given house waste item as recyclable or landfill, in a interactive game	Learners will be shown house waste items on computer screen. They will 'drag and drop' household items into appropriate slots of plastic recyclable, plastic non-recyclable, composite recyclable, etc) 10 items will be presented	At least 8 out of 10 items should be correct. Both parts of question (Parts a and b) should be correct for a question to be considered correct.
Learners can execute the proper method of disposing recyclable waste	The learners play a 'choose your adventure' kind of a game to demonstrate how they will dispose waste	The learners will be presented with an item that will not be in the correct form to be disposed (ie food will be stuck, boxes won't be folded,etc) The learners will be presented with different choises. Depending on what choices/ or paths they select, they can successfully reach a waste configuration that is recycle-ready. 5 such objects will be presented	At least 4 out of 5 times, learners should reach the correct recyclable form (Given 30s for each item)
Learners choose recycling friendly products over non-recycling friendly products	Learners will choose what they want to buy when presented with a virtual grocery shelf	Learners will be given a certain scenario (many guests coming over, food to last at least 1 month, etc) Then, they will be presented with a virtual shelf with different kinds of food (Bulk, canned, frozen, etc). Question part (a) they will select appropriate food item from multiple choice list. Question part (b) will be a likert scale choice (satisfaction). 5 'shelves' and scenarios will be presented	For part (a), at least 4 out of 5 should have the most recycle friendly choice, depending on the situation. For part (b) if the learner indicates they aren't satisfied with their choice(ie know it's correct, but don't like it the choice) more than 2 out of 5 times, then their attitude doesn't meet the target attitude.
Learners can contact authorities who will help them get access to recycling bins	Learners will play a 'choose your adventure' kind of a game to demonstrate how they will contact authorities	Learners will be presented with some facts (such as, recycling bins not available, URO compliant or not, apartment managet not responding, etc) Depending on situation presented, they will choose options/ paths that will lead them to obtaining a bin. 3 situations will be presented.	The learners should reach the 'destination', ie get recycle bins, all three times

Target Behaviour	Action	Assessment	Performance Level
Learners can identify the differences in the impact on environment due to recycling vs not recycling	Learners indicate the positive effects of recycling from a list. They also indicate the negative effects of not recycling from a list	The learners will be provided with a list of 10 effects due to recycling, out of which 6 will be correct. They will have to mark the correct choices. They will do the same for the effects of not recycling (10 choices,6 correct). They will then drag and drop their responses in a comparitive table to show the differences in impact	At least 8 out of the 10 choices should be correctly indicated.
Learners will choose methods that will make them save time and yet recycle	The learner will be put in different virtual scenarios, and will choose how they plan to recycle	The learner will be presented with 3 different virtual scenarios. In each, they will be given the time they have. Question part (a) will be based on how they plan to address it(eg, put small recycle bins in each room, make a timetable, etc). Question (b) will be about how they feel about their choice	For part (a), at least 2 out of 3 should be the most recycle friendly choice, depending on the time situation. For part (b) if the learner indicates they aren't satisfied with their choice(ie know it's correct, but don't like it the choice) more than 1 out of 3 times, then their attitude doesn't meet the target attitude.

5 Instructional Assessments

In this next section, I try developing assessments that are effective, valid, and reliable. I also think about the tools and formats I will use to present the assessments.

5.1 Assessment 1

To test the learning goals for our **Objective 1**, 'drag and drop' question will be used. The images of items to be placed into categories will be lined up at the bottom. On top, there will be category headings. When an item is placed under the correct category, the learner will receive a 'chime' sound and 'brownie points'. Items placed incorrectly will not result in any change. In the end, a slide will display where and why each item should be placed.

Tools and formats Adobe captivate will be used for this exercise. Immediate feedback is possible with this tool.

Figure 1:

Sample question:

Items provided: Toilet paper, Butter box, Glass jar, Milk bottle, Razor, Shredded paper, Aluminium Tray, Sytrofoam container, Cereal box, Orange peel

5.2 Assessment 2

To test the learning goals for our **Objective 2**, 'choose your adventure' game will be used. The images of items to be recycled will be shown on top. Different options, or 'routes' will be given at the bottom. With each choice, the learner will move to a next slide where they'll have further options. They will have to progress slide by slide to get to the end, and 'win' the game.

Tools and formats Adobe captivate will be used for this exercise. Immediate feedback is possible with this tool. Slide navigation techniques will be used to ensure the learners get navigated to the 'end' or 'win' slide.

Figure 2: Sample question that gives a potential senario learners could face on a daily basis

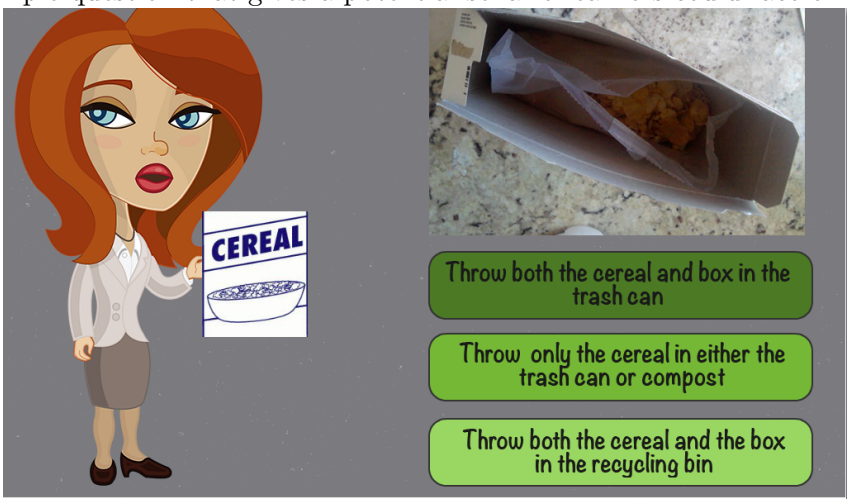


Figure 3: When a wrong option is selected, learners are made to think why their option is wrong

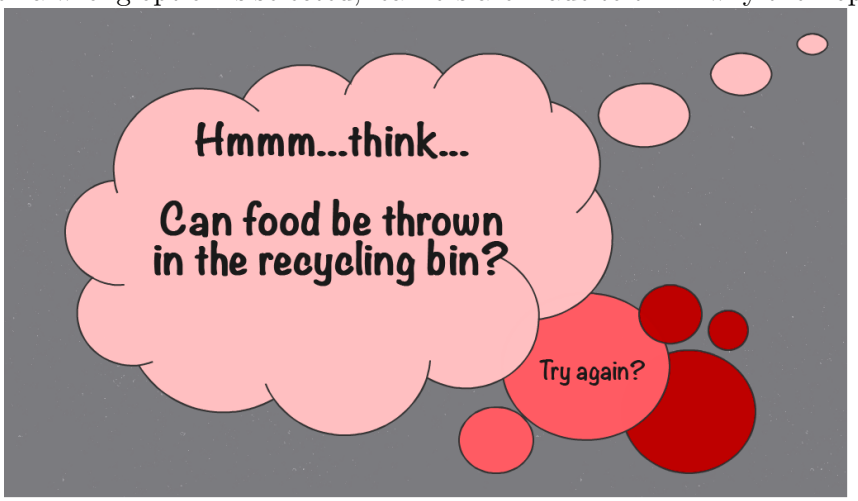


Figure 4: Once they choose a correct answer, they are congratulated and told why they were correct

Sample questions: Some other sample questions can be: A coke can is shown with some coke droplets in it. Question asked- "You just finished drinking this can of coke. What do you decide to do?"

1) Throw the can in recycle bin
2) Crush and throw the can in the recycle bin
3) Wash the coke can with running water
4) Throw the can in the trash

Choosing option 3) will take them to a slide where they will have the option of crushing the can. All other options will make them re-think their choice, and they will be directed back to slide 1. By the end of this question, the learner will have to ensure that they have the can both clean and crushed and ready for recycle. The very last slide will explain why that configuration is required (Liquid intereferes with recycling process, not crushing takes up too much space, etc)

Other questions will be similar to this, where sometimes they may have a non-recylable item, or they may need to wash the item twice, separate some items, and so on.

5.3 Assessment 3

To test the learning goals for our **Objective 3**, a 'multiple choice' question will be used for part (a) of the question. A situation will be given for learners. They will be presented with 4 options, about the kind of food type and packaging they would opt for. Learners will have to choose the 'best' option (that's already determined)

Tools and formats Adobe captivate will be used for this exercise. Immediate feedback is possible with this tool. The reasons for the correct answer, as well as for the wrong answers will be given.

Sample question: Question asked- "You are stocking up for a road and camping trip. You will have access to stove for heating up food. You will also have a cooler and access to ice packs all along the way. You want to buy a few things to eat. You have four options in your shelf. What do you choose? "

1) 4 cans of pre-cooked beans (4 oz each), 2 packets of frozen vegetables (8 oz each), 4 packets of frozen sausages(4 oz each)
2) 4 cans of vegetables (5 oz each), 1 sack of sweet potatoes (1 lb), 4 packets of frozen beef patties (8 oz each)
3) 1 bag of dried beans (1 lb), 2 packets of frozen sausages(8 oz), 1 packet of frozen vegetables (16 oz)
4) 6 potatoes(8 oz), 2 packets of beef patties(8 oz total), 4 cans of vegetables (5 oz each)

They will have to choose the most environment friendly item. Option (3). Feedback and reasons will be provided.

5.4 Assessment 4

To test the learning goals for our **Objective 3**, a 'likert scale' question will be used for part (b) of the question. After the correct option is presented, a Likert scale will be given to guage satisfaction of learner

Tools and formats Semantic differential will be used for measuring attitudes. A link to SurveyMonkey will be provided through the Captivate slide.

Sample question: Part (a)
Question asked- "You are stocking up for a road and camping trip. You will have access to stove for heating up food. You will also have a cooler and access to ice packs all along the way. You want to buy a few things to eat. You have four options in your shelf. What do you choose? "

1) 4 cans of pre-cooked beans (4 oz each), 2 packets of frozen vegetables (8 oz each), 4 packets of frozen sausages(4 oz each)
2) 4 cans of vegetables (5 oz each), 1 sack of sweet potatoes (1 lb), 4 packets of frozen beef patties (8 oz each)
3) 1 bag of dried beans (1 lb), 2 packets of frozen sausages(8 oz), 1 packet of frozen vegetables (16 oz)
4) 6 potatoes(8 oz), 2 packets of beef patties(8 oz total), 4 cans of vegetables (5 oz each)

They will have to choose the most environment friendly item. Option (3)
Feedback and reasons will be provided.

Part (b)
Question asked– Great! now you know that option (3) is the most environment friendly option. How do you feel about trying to choose the most environment friendly option when you're shopping?

Not motivated – – – – – Motivated

6 Instructional Strategies

I have to design our instructional material depending on the context and environment, learners, and type of learning to be achieved. In this section, we see if our learners are adults or children. We also see if the environment is of an individual, small group or a large 'class-room' setting. The category of skills to be learned are also important, and I have to align appropriate instructional strategies that will successfully achieve the skills goals.

6.1 Objective 1: Identifying recyclables

Type of learning: Verbal, and teaching 'rules'

Strategies to be employed	**Activities that reflect the strategies**
Review of component concepts	A video will be shown that depicts what happens in a recycling plant. This will show *why* we need to separate recyclables properly. The video also gives a few examples of recyclable and non-recyclable materials and relates them to general recycling practises of people. The link is `https://www.youtube.com/watch?v=5YaTpL8nl7c`. (This part also addresses Steps 1, 2 and 3 of Gagne's learning steps.)
Rule development	Learners will be presented with virtual pamplets and posters that describe what can be recycled. Connections will be made to the video, and why certain materials can't be recycled will also be mentioned. (This part also addresses step 4 of Gagne's learning steps)
Rule uses	This section will pretend that the student has recycled a few items. Examples of what can be achieved wilth recycling will be presented. This will be an interactive, non-assessment based segment where learners can match benefits with a particular recycling activity. Feedback will be given. (This part also addresses steps 5 and 6 of Gagne's learning steps)
Practice with feedback	A drag and drop assessment technique will be used where students can practice where to throw a particular kind of waste. Learners will also be encouraged to practice in real life, and keep a self-log of recycling efforts. A self-log template will be available for print out. (This part also addresses steps 7, 8 and 9 of Gagne's learning steps)

6.2 Objective 2: Converting recyclables to appropriate form

Type of learning: Motor skills

Strategies to be employed	**Activities that reflect the strategies**
Provide demonsrations and models	Images and videos will be shown of the recyclables in proper configurations. An interactive activity be presented where learners can match effects of materials being in an inappropriate form.
Allow for practice with feedback	'Choose your own adventure' kind of an activity(asssessment + feedback as described in the 'assessments 2' section) will be conducted, so that learners can practice virtually
Provide opportunities for practice	Learners will also be encouraged to practice what has been learned in real life, and keep a self-log of recycling efforts. A self-log template will be available for print out.

7 Instructional Materials

In Instructional Design, it's good to have 'Learning Objects' (LO). LO can be thought of as instructional components that can be re-used any number of times. They can be categorized according to the role they play. When faced with a situation that requires a similar category of instruction, the same LO template can be used. Thus, LOs are highly replicable, and they have the potential to save time. Listed on the next page asre some instructional materials that will be used to create LOs.

Objectives	Instructional materials that will help the objective
Objective 1 Learners can distinguish the items that can be recycled from landfill items	• **Multimedia and hypermedia: Video tools** Learners will be presented with a video that shows the segragation procedure of recycling, and why recycling correct materials is saves time and energy. • **Text materials: Pamphlets and Handouts** Posters and pamphlets will give a brief pictoral overview of what can be described and what can't • **Instructional software: Drill and practice** The learners will practice where to throw which kind of waste through practice and assessment quiz. This will be achieved through Captivate, a e-learning tool • **Text materials: Worksheet** A self-log checklist that will be provided to learners so that they can practice their learning • **Web based tools: Website links** A link to a website `https://www.austintexas.gov/what-do-i-do` will be provided. This website will allow learners to find out "what-do-I-do-with" for various waste materials
Objective 2 Learners can execute the proper method of disposing the recyclable waste.	• **Multimedia and hypermedia: Video tools** Images and videos will show the peoper configuration of the product to be thrown • **Instructional software: Instructional game** 'Choose your own adventure' kind of an activity will be conducted, so that learners can practice virtually • **Text materials: Worksheet** A self-log checklist that will be provided to learners so that they can practice their learning

8 Learning Environment

An important factor in any instructional intervention, or course, is the kind of environment that will be used to deliver the instruction. In-person, online, and blended, are three major kinds of environment. So why is thinking about this format so important?

Well, the way content is presented, the way people interact, the way assessments and feedback can be provided, are very different in each type of environment. For instance, spontaneous facial expressions, body language, or visual cues, can act as a method of feeedback for instructors in in-person environments. In online, instructors may have to use feedback surveys and discussion forums (language used in posts, number of posts, etc) to get a sense of how well students are responding to the course.

8.1 'Captivate' as an online learning tool

- **Course Model**: The course will be available completely online. This will be an individual, self-directed course. If used independantly, the participants will be expected to register online through a website link. Thus, it is expected that the individual has access to internet connection, and necessary hardware (computer, headphones, mouse, etc). If used in schools/classes as an exercise, mini-activity/course, the class is expected to provide all resources. Software requirements and OS requirements to run the .swf file will be explained in the website link. Necessary software downloads will also be explained step-by-step in the website
- **Course Structure**: The course is self-contained, even though it's offered online. Thus, it will not need a CMS/LMS as a support. Navigation and menu will be provided in the side panel of the tutorial. At any time, a 'help' button can be clicked. This will take the learner to an 'how to navigate through this tutorial' slide.
- **Assignment and assessments**: Since this will be a course that can be completed at a single go, no assignments will be provided. Assessments will be included as a part of the tutorial itself. Since the learning objectives are relatively straight-forward, interactive assignments with immediate feedback will be helpful for students.
- **Content presentation methods**: A big advantage of captivate is its interactive nature. This property will be made full use of while presenting content. Links to videos, interactive learning exercises (click to reveal content), guessing exercises (drag and drop), etc, will be used to present the content. This will hopefully keep the learners curiosity and attention throughout the tutorial.
- **Interaction and communication**: Interaction between peers will be limited. Interaction between content and learners will be high, due to the nature of 'Captivate'.

9 Formative Evaluation

Another important factor in an instructional intervention, or course, is the evaluation of the course. 'Formative evaluation', enables me to review various components of the instruction, and modify them before final roll-out. To properly evaluate mt instruction, I need input and data from various sources (SMEs, beta test group, etc) on various issues (content, style, clarity, usability, tech issues, etc).

Formative evaluation usually uses the inputs from SME, individual interviews, and small group reviews. For this instruction, due to the time and nature of the content, I will only be using small group reviews to assess the instruction. For this, I can prepare a satisfaction survey. I can also interpret effectiveness by using the post-test scores, and seeing if they match my target objectives population score.

Once I find gaps, I will work on those areas to bridge the gaps. This may take a few iterations, but once the gaps seem to be filled, the product will be ready for a larger scale roll-out.

Please see below a sample of the satisfaction survey that I plan to use. The number of participants in the group will be between 30 and 50. Learners will be selected from age groups such as 12-18, 18-25, 25-45, 45 and over, to have fair representation of the general target population.

Learner Feedback and Evaluation of Instruction

Thank you so much for participating in our study! The results of this survey will be very valuable for the designers to construct a suitable educational product.

Please answer the questions given below. Depending on your choice of answer, make a mark inside the boxes

1. The content was easy to follow
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree

2. The content had a logical flow
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree

3. You could navigate the course easily
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree

4. The activities supported effective learning
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree

5. The assessments seem fair and logical
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree

6. The assessments give you a good measure of how much you have learned in the course
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree

7. You could access all links to videos without any problem
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree

8. The course was adequately challenging
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree

9. The time taken to complete the course was reasonable
   ☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree

10. You feel the course helped achieve the learning objectives it is aiming for

☐ Strongly agree ☐ Agree ☐ Unsure ☐ Disagree ☐ Strongly disagree

11. What did you like about this course?

(a) _____
(b) _____
(c) _____

12. What did you dislike about this course?

(a) _____
(b) _____
(c) _____

13. Please list some specific problems you faced during the course

_____

_____

14. Do you have any suggestions that will improve the quality of this course?

_____

_____

15. Please give us your general feedback

_____

_____

Thank you for your time!

_____

_____

10 Summative Evaluation

A summative evaluation is required to see whether or not a course (or solution) is better than the pre-existing practices and solutions. It is also required to decide whether or not a course should be continued. It can also help decide whether or not a course should be expanded to other areas or topics. In my case, I would want my summative evalaution to address the following two questions:

1. Is the course worth continuing
2. Can the course be expanded, and included as a training requirement in apartment complexes, universities and schools in Austin. Could such recycling training be applied in other cities in the USA as well?

10.1 Type of Study

I will be using a casual design approach. Since the roll-out for the cource isn't going to be wide spread, and the course isn't a requirement as of now, I will be using the 'Two-group pretest-posttest design'. This is also considered the strogest study design in the casual design approach.

The pre-test can be embedded in capivate tutorials for the study on positive control. For the negative control, just the pre-test and posttest will be provided. The posttest in this case will be all the assessments that were used within the training module. Test scores will be computed quantitatively.

The posttest scores of the learners/participants in the training module will allso be compared to the target scores.

In addition, formative evaluation results will also be used to guide future decisions for the training module.

10.2 Sources of data and methods of collection

As mentioned, quiz and test data will be the sources for coducting this evaluation. Adobe capitivate allows quiz results to be written to a server. `https://helpx.adobe.com/captivate/using/report-acrobat-com-or-internal.html`, Thus, I can use data wrangling techniques using Python to collect data and store it in a schema appropriate for the analysis required.

10.3 Analysis of data

The data can be analysed using standard quantitative statistical tecniques.

10.4 Reporting findings

Visualization tools such as Tabeau, or Spreadsheet graphs can be used to convey the results and report conclusions drawn from the analysis step. This report can be made available to all current stakeholders, and future potential clients/stakeholders.

11 Conclusion

These steps conclude the design document. It may be so that some steps need to be re-visited and several iterations be needed to arrive at a suitable instructional intervention. But following the steps, and maintaing a record of changes and suggestions will make this process smoother, and subsequent projects easier to create.

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