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Narrative visualization for co-design with a community partner

Abstract

Deficient financial literacy is an important international problem, and research suggests the potential effectiveness of narrative visualizations. This paper presents a case study: a collaboration between a class of design students and a community-based financial-counseling organization to develop financial-literacy comic strips for use with the organization's low-income clients. We describe and examine the communication challenges between a community partner and an academic institution, detailing the several communication modes employed. These modes include questionnaire and surveys of the counselors; emails directly between students and counselors; and most successfully, a hands-on visualization workshop with counselors. The visualizations engaged counselors with generative (based) design practices, which resulted in superior communication with design students. Lessons from this experience may be broadly useful for any collaborative efforts among academic institutions, design students and community partners.

Keywords: co-design; narrative visualization; generative design; community partner; visual communication

Introduction: Financial literacy education and the problem of “how-to”

Financial literacy is recognized worldwide by governments and businesses as being of vital importance (Lusardi & Mitchell, 2013; World Bank, 2012). In the U.S. financial literacy is especially important for low-income (financially marginal) individuals operating in an economy in which substantial financial risks are assumed by citizen consumers, who are faced with complex financial decisions.

Globally, organizations such as the OECD (The Organisation for Economic Co-operation and Development) and the World Bank have spearheaded efforts to measure levels of financial literacy and to promote financial literacy education programs (Yoong, 2011; Yoong et al., 2013). These efforts are founded on a belief that more and/or better financial education will lead to better financial decision-making by individuals and ultimately to a stronger economy.

However, there are numerous obstacles in correlating financial literacy education with improved financial outcomes. The evidence that improved literacy leads to improved behavior is weak and plagued with methodological problems (Willis, 2011). Poor financial outcomes can also be the result of circumstances beyond an individual’s control (such as job loss or natural disaster) as well as factors (values, situations, attitudes, behaviors etc.) which are neither observed nor measured:

If financial decisions were just about money, if they were part of a game without real life consequences, we could develop decision rules that maximize wealth. But financial decisions do have consequences, requiring tradeoffs among costs and benefits that are valued very differently by different consumers.... The quality of any financial decision will depend on the values held by the consumer and a host of other unobserved situational, psychological, and social factors.

(Willis, 2009, p. 432)

Recently, in efforts to focus financial literacy programs better around the kinds of real financial factors that individuals face, the OECD and other organizations have begun to use case studies, narratives and explorations of new media (Lusardi et al., 2015; Berg & Zia, 2013). The role of narrative visualizations in creating effective financial literacy materials has been previously discussed by the authors (Overby, Wilson & Fry, 2014). Visualizations that incorporate pictorial elements and story have been shown to increase comprehension and memorability (Bateman et al., 2010). Also, recent neuroscience research suggests that learning is enhanced when emotions are engaged (Immordino-Yang, 2015).

In the context of financial literacy, narrative visualizations—in the form of illustrations, comic strips, fumetti etc.—can depict financial decision making within the social and emotional context of individuals’ lives, allowing them to see more fully the consequences of their financial behaviors (Fry, Wilson & Overby, 2014). In this paper, we extend this concept by showing how narrative visualizations can also be effective in facilitating communication between a design class and a community partner as they work together to create financial literacy materials.

In Part 1 we introduce the community partner with whom the design class worked, and we follow this by a short exposition of narrative visualization techniques. In Part 2 we present the various communication methods used initially among the instructors, the students, and the community partner. In Part 3 we describe how generative-design principles in a workshop with the community-partner counselors enabled them to create their own narrative visualizations to communicate with the students. Part 4 analyzes the ways in which the partner-counselors' drawings from the workshop communicated visually and more-effectively with the students. We conclude by recommending methods of generative design and visual communication for more-general use in design students' collaborations with community partners.

Part 1: Context

Community partner

Neighborhood Trust Financial Partners (<https://neighborhoodtrust.org>) (NTFP) is a nonprofit organization that provides financial counseling and financial workshops for low-income adults in New York City. It is the largest provider of such services in New York City, offering programs in conjunction with the NYC Department of Consumer Affairs' Office of Financial Empowerment. Since 2011, NTFP has used a curriculum developed in conjunction with Global Learning Partners (<http://www.globallearningpartners.com>) based on a five-part storyline (Emma's Story). This storyline that complements other learning materials throughout a five-week program "Getting Ahead", which covers topics such as credit scores, savings, and use of credit cards and debts. Emma's Story is a text-based fictional composite derived from the financial-counseling experience of the NTFP counselors, and includes the emotional, psychological and cultural aspects of financial decision making.

Figure 1 presents the first chapter of the Emma's Story, which NTFP uses in the "Getting Ahead" workshops; counselors have here added comments about influences on financial decision-making.

Week 1

Emma *Heidi* *Justin* *John A.*

Emma is a single mom who works as a full time Home Health Aide. When she was much younger, she rented an upscale studio apartment with a doorman, bought what she wanted on credit, and took some nice vacations with friends. It was fun.

But now Emma has to face reality. After her divorce, things got pretty tough financially. Child support is spotty. She works hard but never quite seems to make ends meet. Last January the rent on her apartment went up.

Emma has a 12 year-old daughter named Rachel who means the world to her. She sends her to a private school because she values Rachel's education over everything else. Emma's big goal is to send Rachel to a good college. But, she feels like she'd have to save a fortune.

Her good friend, Monica, always tells it like it is. She says: "Emma, you have to *think* ahead to *get* ahead." So, Emma's thinking to move to a cheaper apartment (one with fewer amenities) to try to save on rent for a while. She wants to pay off all that debt she's built up and still get Rachel the future she deserves.

On her way to work last month, Emma saw an ad for some free financial advice. Since then, she's been carrying around the phone number, thinking maybe she'll give them a call.

Please list the key concept elements (financial, ethical, behavioral, cultural, emotional issues) in Emma's story

- Over Spending
- not having consistent income
- long term goal (Rachel's education)
- Procrastination - thinking of calling financial Advisor.

hopeless - *Emotional*
lost - *issues*

List other key elements that our Getting Ahead clients face (may or may not be captured in Emma's story)

not enough income
Child support issues
owed taxes

Figure 1. Sample of Week 1 of NTFP's Emma's Story in printed form, with comments from counselors.

In 2014, the first two authors planned a Visualizing Finance Class (VFC) at Parsons School of Design for the following Spring semester, and entered into an agreement with NTFP to allow them the use of Emma's Story in the class. The original intent was to have the students produce a comic strip based on Emma's Story for the NTFP counselors to use with their clients. However, over the duration of the partnership, the relationship developed beyond that of designer-client to incorporate elements of co-design through visual communication between the counselors and students.

Narrative visualization

Narrative visualizations incorporate the primary aspects of storytelling—character, setting, dialog and nonverbal cues—presented in various formats, such as illustrations, fumetti, videos and comic books. When used to enhance financial literacy, narrative visualizations provide contextually- and metaphorically- rich financial situations in a way that is immediately accessible to viewers (Fry, Wilson & Overby, 2014).

An ambitious example that uses narrative visualization to address questions of financial decision making and consumer choice occurred in a 2012 story line in the South African soap opera *Scandal!* Developed by its production company Ochre Media and the National Debt Mediation Association (NDMA), the story addressed the widespread problem of household debt in South Africa. In this multi-week story, the primary character fell increasingly into debt and finally sought help from an NDMA financial counselor. Figure 2 presents some frames from this story, in which the primary character discusses her debt.

At the end of each episode, the series broadcast the NDMA phone number through a public announcement of free financial counseling.



Figure 2. Two frames excerpted from the soap opera *Scandal!*, E Television, NFH productions, in collaboration with The World Bank, South Africa, 2012.

Assessment of this campaign showed that viewers remembered the incidents in the story-line with a high degree of accuracy but few remembered the NDMA counselor who had appeared briefly, and fewer still remembered the public service announcement (Berg & Zia, 2013).

The researchers speculated that the primary reason for these findings was that retention was dependent upon the level of emotional connection that the viewers felt with the primary character, the counselor character, and the strictly-informational announcement. While hand-drawn illustrations and comic books do not have the immediacy of a television story, they similarly allow for rich development of character, story and setting. These narrative visualizations may also incorporate other visual elements such as metaphor or thought bubbles to emphasize the characters' ideas and emotions.

Figure 3 depicts a scene from the final Emma's Story comic strip that originated in the Parsons course in Spring 2015. This scene shows Emma contemplating whether to pay in full or in installments for a new computer. Her financial decision process is communicated through speech and thought bubbles as well as facial expression, body language and setting. The consequences of the decision are clear in the second scene: her daughter enjoys the computer while Emma is happy to be debt free.

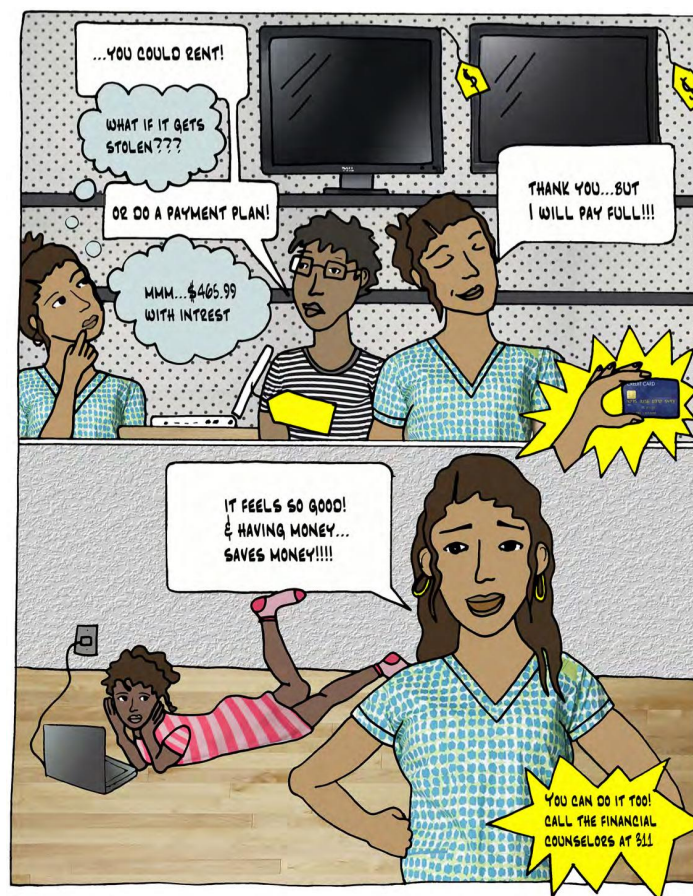


Figure 3. Two frames from the final version of Emma's Story, a two-part comic narrative produced in the Spring 2015 course that is the basis for this case study.

Regardless of the format, we suggest that narrative visualizations effectively illustrate examples of individual financial behavior through realistic stories and settings. They highlight the complexity and significance of financial decision-making, but also create emotionally-resonant and memorable messages that may help to influence financial behavior (Fry, Wilson & Overby, 2014).

The goal of the partnership with NTFP was to draw on the expertise of the NTFP counselors as the students developed the comic strip of Emma's Story. By taking advantage of the counselors' deep understanding of the situations, challenges and life stories of their clients, it was hoped that the students would be more able to develop the specifics of character, setting, motivations and emotions of Emma. The design course was launched in Spring 2015 with the specific aim of having students use narrative visualization methods to create real-world financial literacy materials, working as co-designers with their community-based partner.

Part 2: Collaboration and communication

Special Topics: Visualizing Finance is an elective course offered at the senior (fourth year) level in the Strategic Design and Management program at Parsons School of Design. This program awards a Bachelors degree in Business Administration (BBA). As described above, students in the *Special Topics: Visualizing Finance* course collaborated with Neighborhood Trust Financial Partners (NTFP) in Spring 2015 to co-design visually-based financial literacy materials for NTFP's counselors to use with their clients. The class and its members are here referred to as VFC (Visualizing Finance Class).

In addition to the pedagogical value, this collaboration was intended to begin testing the instructors' previous research on narrative visualization for financial literacy (Fry, Wilson & Overby, 2014).

The written narrative of Emma's Story (see Figure 1 above) demonstrates the emotional and psychological nature of an individual's financial decisions and encourages the NTFP clients to identify these factors in their own financial decisions. This personal identification is believed to help clients change their financial behaviors. By translating the story to a narrative visualization, we hoped to enable increased changes in clients' personal financial behaviors.

While developing our collaboration agreement with NTFP, we agreed to a co-design process that would include reviews of student work-in-progress by NTFP financial counselors. These reviews were envisioned either as in-class critiques with counselors, or as emailing VFC student work to NTFP counselors and receiving email responses from them.

Communication methodology

From the beginning of the collaboration, communication was primarily by emails and phone calls between the VFC instructors and the NTFP point person, as shown in Figures 4 and 5.

Timeline summary of all interactions between Parsons Visualizing Finance Class (VFC) and Neighborhood Trust Financial Partners (NTFP).

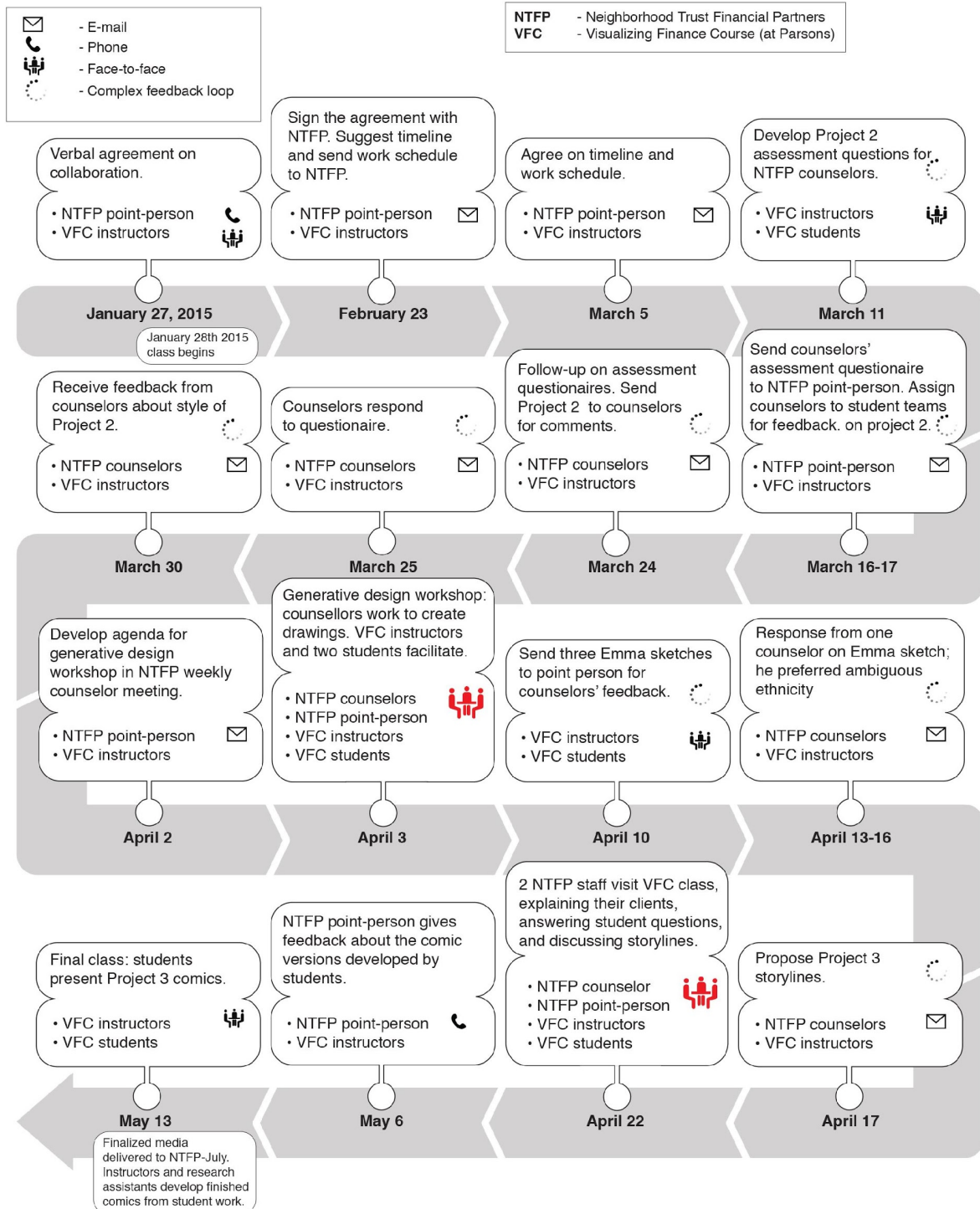


Figure 4. Mapping interactions between the design class (VFC) and community partner (NTFP) throughout the project. Icons indicate modes of communication and presence of complex feedback loops. Note that there are only two instances of students interacting directly with counselors which we have marked with larger red isotype symbols.

The email/phone method of communication caused numerous difficulties:

- Because VFC students and NTFP counselors communicated through two intermediaries, messages were not always clear.
- The multi-layered communication sometimes caused long delays: see Figure 4 (a timeline summary of the interactions) and description below.
- Intermediaries, multi-layered communication, and lack of a shared language created complex feedback loops. These are highlighted by icons in Figure 4's timeline summary of interactions, and are illustrated in Figure 5.

Of the total 16 activities shown in Figure 4, there were only two instances of face-to-face communication between VFC students and NTFP counselors:

1. A visualization workshop at NTFP with counselors and point person, facilitated by two VFC instructors and two VFC students (April 3)
2. NTFP point-person and one counselor participating in VFC class (April 22)

These face-to-face communications are highlighted in Figure 4 below by large red icons on those dates.

Complex feedback loops leading to time delays

The VFC students began to work on Emma's Story in the March 25 class, after instructors and the NTFP point-person defined the projects. Because NTFP counselors had very little time to guide the project, we (the instructors) used phone calls and emails through the point-person as the least-invasive way to garner feedback. However, this "middle man" mode often created a confused complex feedback loop, as seen in Figure 5. Also, time delays occasionally held up progress at critical junctures; as class met just once a week, a late answer from NTFP sometimes meant seven days of delay.

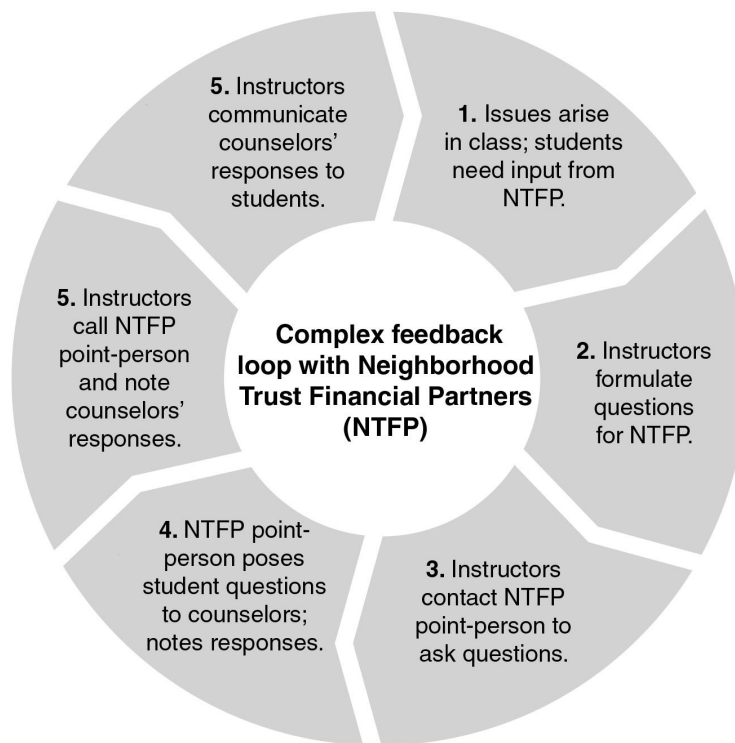


Figure 5. The complex feedback loop above was time inefficient and subject to errors of interpretation. Figure 4 tags instances of this with a dotted-circle icon to indicate a processing delay.

An especially disruptive example of delay in our workflow occurred around representations of the Emma character. Students created several sketched versions in class on April 8 (Week 10); the instructors emailed these to the NTFP point-person on April 10, with a request that NTFP counselors choose one version for development. The point-person forwarded the sketches and request to counselors on April 14, and a single counselor responded on April 16. These delays meant that VFC students could not move ahead with Emma's character development until the April 22 class (week 12). This left just two more class sessions to complete the comic.

Lack of creativity and nuanced information in counselor feedback

When requesting feedback from NTFP counselors, we tried to be as clear and narrow as possible: e.g., “please answer specific questions,” “choose from these 3 options.” These controlled survey formats and assessments were intended to protect the counselors’ limited time; however, they also hobbled the counselors’ scope for creativity.

A good example of a controlled interaction (see March 24 portion of Figure 4) was the solicitation of NTFP counselors’ feedback on the students’ Project 2. This warmup project was a narrative visualization of a financial decision process by an Emma-like character (example below in Figure 6).

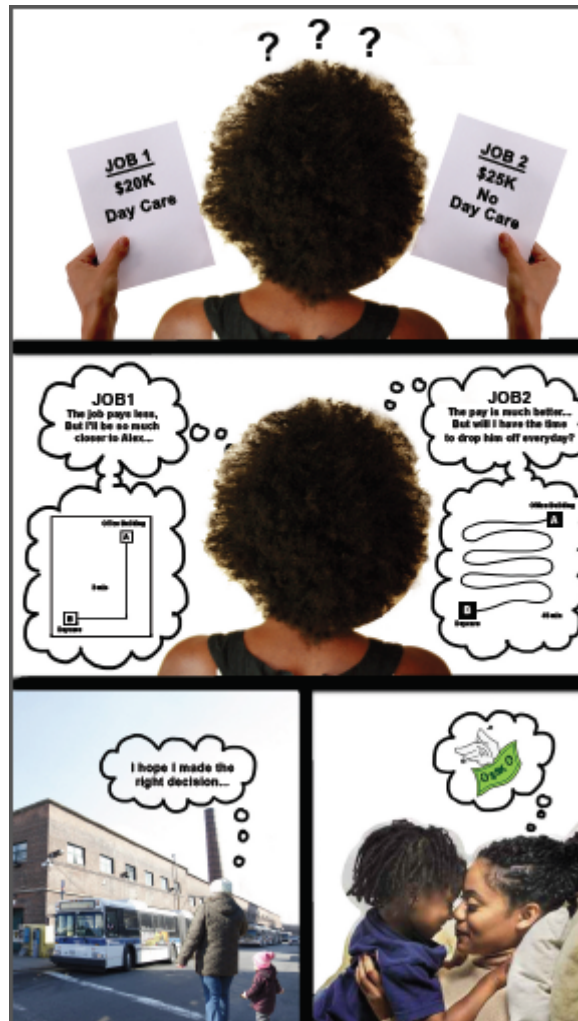


Figure 6. This example of Project 2 by VFC students required students to depict a complex decision process using an “Emma-like” character.

The Parsons instructors originally intended for student teams to co-design Project 2 directly with their assigned NTFP counselors, but in order to save time a questionnaire was crafted to focus the counselors’ feedback. This questionnaire had two portions: “Assessment” and “Suggestions.” Addendum A shows the complete questionnaire, and a sample of counselors’ responses follow in Addendum B.

Despite the limits of the questionnaire format, the counselors’ feedback on the Assessment portion of the questionnaire was thoughtful and searching. For example, when asked whether the visualization’s message was clear and understandable, they replied “not very clear...what decision it is that she made and is now pondering” (Addendum B). In contrast, counselors’ responses in the Suggestion portion were focused yet rather narrowly specific. For example, when asked how the visuals could be more relevant, realistic, and engaging, they suggested some design tweaks to the visualization: “she could look at an MTA map... [to] make it more... relevant to New York. More imagery of NYC or of her in her apartment might make it a bit more colorful...” (see Addendum B for more detail). The questionnaire format seemed to limit the counselors’ co-design and creativity, and they tended to respond as critics of existing visuals rather than as generators of alternate possibilities.

Part 3: Using generative design methodologies to resolve communication problems

In order to give students greater access to the counselors' content and cultural expertise, we conducted a visualization workshop in the NTFP counselors' weekly meeting on April 3 (see Figure 4). This workshop used generative-design methods: techniques derived from Sørensen's re-contextualization of Sanders's work in her MoneyWorkshop (Sorensen, 2013, Sanders, 2000). Sanders's generative design practices encourage users (partners) to create their own artefacts to express wider and more emotionally rich experiences and needs than traditional function-based communication. In Sørensen's MoneyWorkshop, participants use design practices and collage to focus on their own experiences with money.

The workshop with counselors became the key activity in bridging the gap between the students' understanding and the counselor/client realities.

In this workshop we challenged the fourteen NTFP counselors to create several short comic strips that would support the Getting Ahead program by telling stories of decisions around money. A VFC team worked with the counselors as design facilitators: two student leaders, one instructor and one teaching assistant.

The counselors worked in groups of two or three and were asked to

... take 5-15 mins to draw a visual narrative... something very simple, using things like stick figures and using your wealth of knowledge about past client experiences and the barriers they face. This should be fun, and allow each of you to be creative. The Parsons team members will come around and talk to counselors to help.

- From VFC document, 2015

As the counselors' visualization workshop began, several were reluctant, saying "I can't draw" but perhaps meaning "I am unfamiliar with this language and don't know how to begin telling my clients' stories." By working in small teams, the counselors were able to reassure each other about making "true" visual depictions rather than striving for "artistic" ones. They also engaged spontaneously in the design/critique/reiterate cycle within their teams and as a larger group, beginning to identify the most-important aspect of each mini-story they told: aspects such as a character's tone/appearance/phrasing/emotional engagement (e.g., the boyfriend who wants to borrow money for the truck became an extremely vivid character, sparking discussion of romantic dynamics' effects on financial decisions).

The counselors' visualizations are shown below in Figures 7, 8 and 9. The commentary within the bubbles is from NTFP counselors, while the visual analysis below each Figure is from the authors.

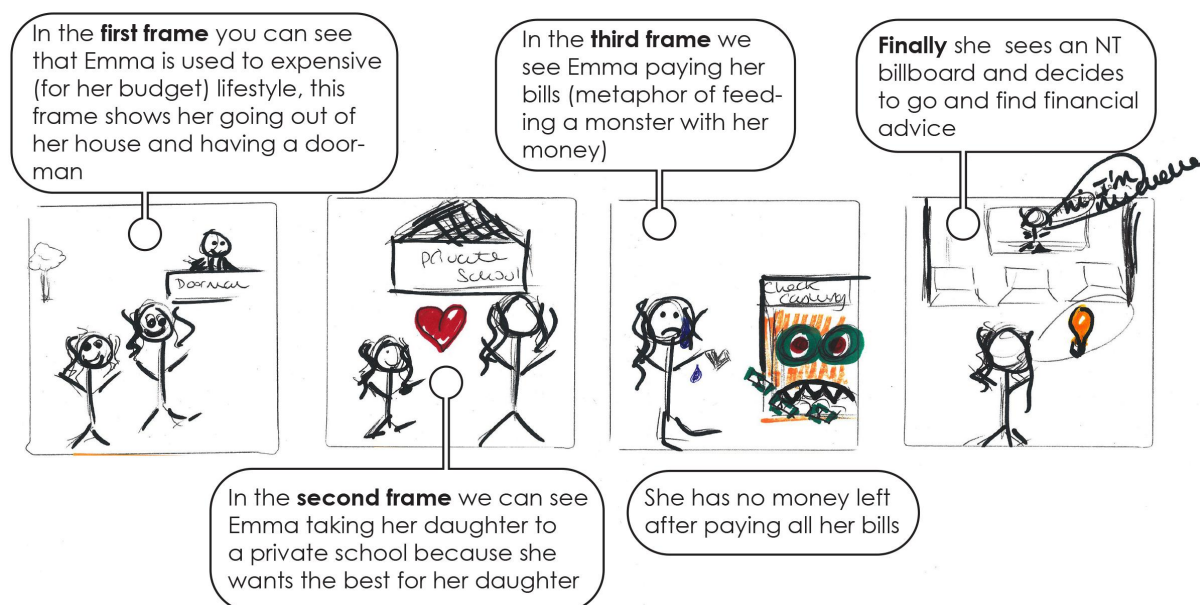


Figure 7. Visualization created on April 3 by NTFP counselors Michelle Morillo and Fernando Duran, counselor narrative comments have been added by us in bubbles. See also the April 3 reference on the Figure 4 timeline.

In our analysis we use content and visualization elements derived from our Visualizing Finance Lab's InfoEmotion matrix (Overby, Wilson & Fry, 2014; see Addendum C). In the first frame of Figure 7 facial expression and body language communicate happy and carefree emotions, while the setting suggests that Emma had made a decision to live beyond her means. The centrally-placed red heart metaphor in the second frame indicates that while Emma's decision about private school for her daughter will have positive financial consequences in the far future, the strongest factor in this decision is emotional—her love for her daughter—which will have negative financial consequences in the present and in the near future. The absence of Emma's facial expression in the second frame suggests her dilemma. The most compelling visual metaphor appears in frame three: an entity that is simultaneously a check cashing shop, a monster and a dumpster, which devours Emma's cash and leaves her in tears. In frame four, these difficulties lead her to a "light-bulb" insight about her financial situation and cause her to decide to seek financial advice, indicated by the office-like setting.

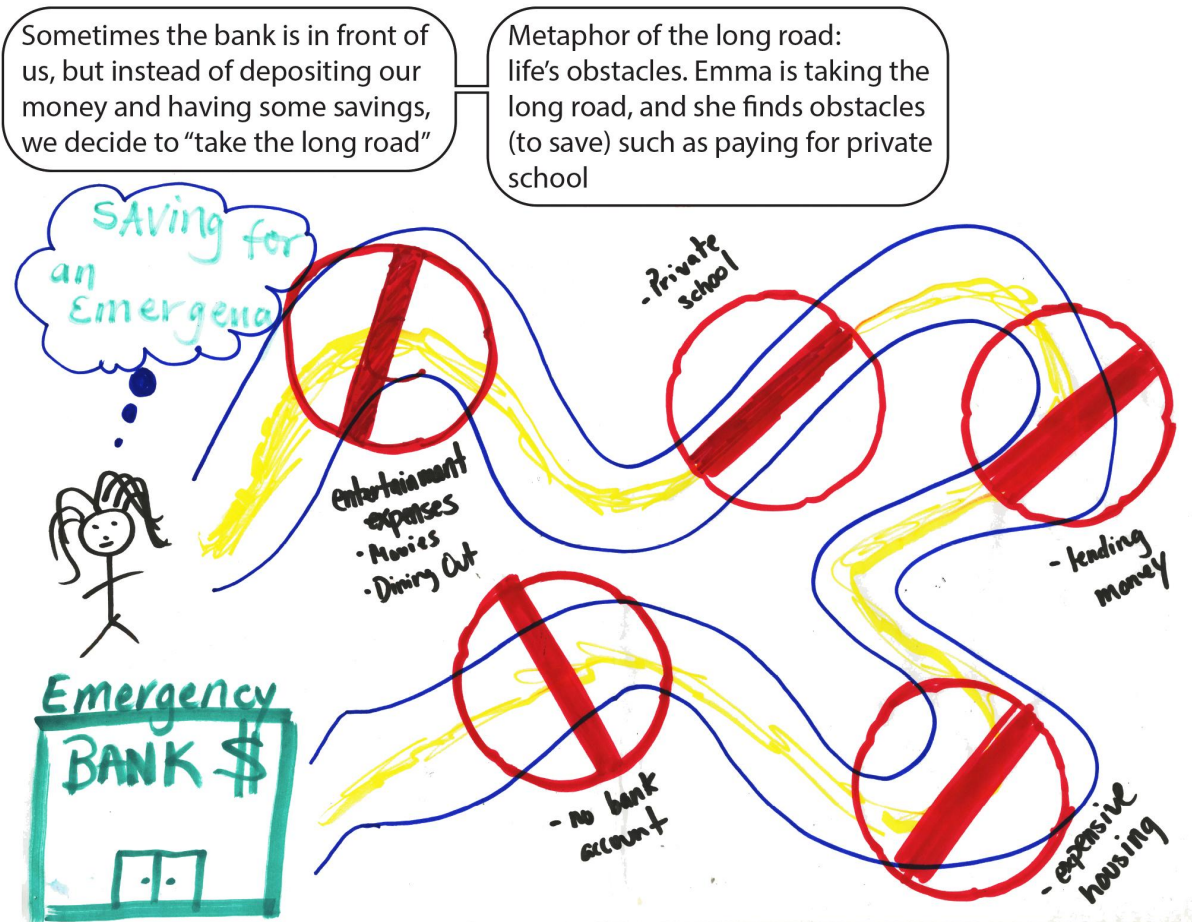


Figure 8. Visualization by NTFP counselors Hector Hidalgo and Janet Silva with counselor comments in bubbles.

Figure 8 uses the visual metaphor of the “long road,” as well as that of the game board. This twisted path indicates Emma’s tortuous financial situations (expenses, obligations, costs and lack of banking) and decisions, with red “stop” (or danger) visual metaphors. Emma has confident body language and a pensive facial expression at the beginning of her journey toward the ultimate goal of an emergency fund. The emergency fund is represented by the setting of a bank building, colored green to signify the oasis or “go-ahead” that the banked emergency fund represents.

Joe has an idea, and he wants Emma to lend him money

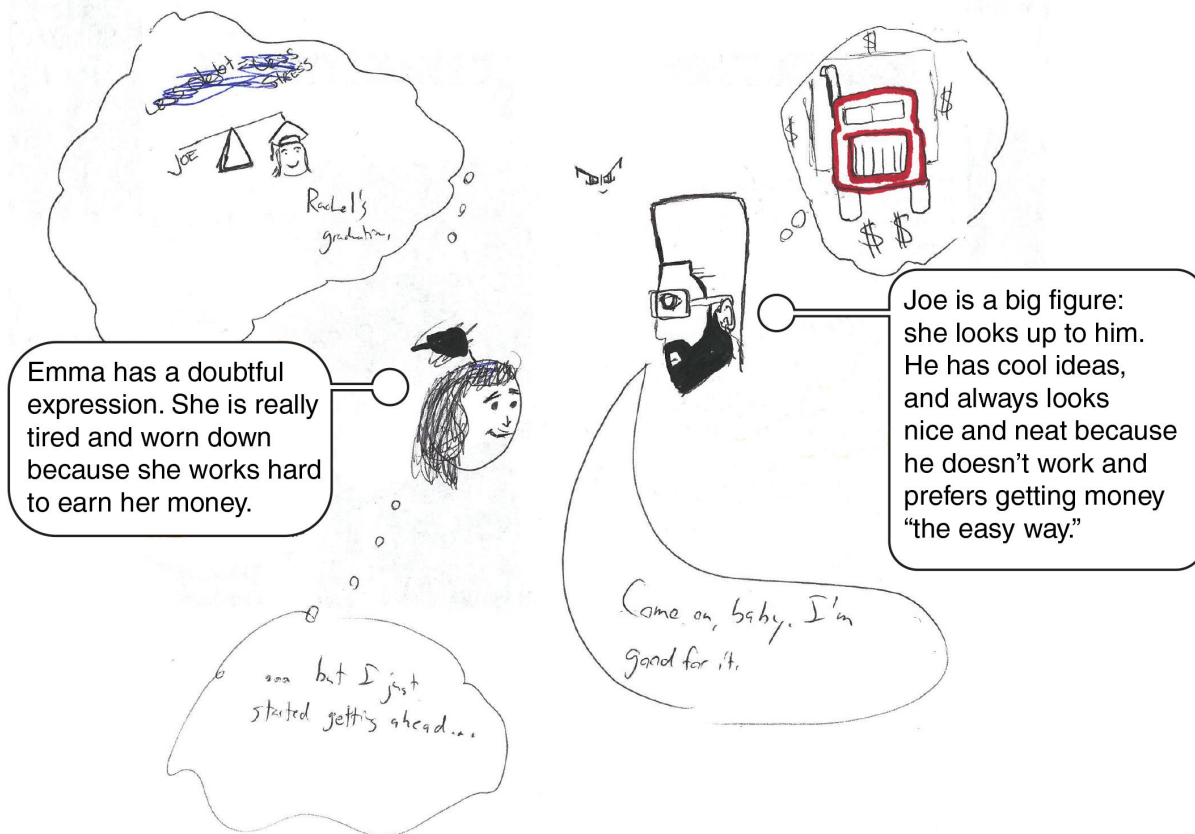


Figure 9. Visualization by NTFP counselors Justin Enany and John Figueroa with counselor comments in bubbles.

Figure 9 shows complex emotions, beginning with a visual metaphor of “weighing” her daughter’s graduation against her boyfriend’s wanting to borrow from Emma for a truck, which in his dreams will yield “truckloads of money.” The smoothly-dressed Joe—dominant through facial expression, body language, size, placement, and level of graphic articulation—contrasts with a frazzled Emma, rendered with scribbly lines and a hesitant facial expression, avoiding eye contact with Joe. Even Joe's well-articulated dream seems more vivid and compelling than Emma’s, and he is speaking it while Emma is only thinking about her financial decisions and their positive consequences: her daughter’s education.

Part 4: Analysis of visual communications

Communicating visually allowed the NTFP counselors and VFC students truly to begin to co-create collaborative designs, bridging the gap between the students' limited understanding and experience and the counselor/client realities. When the counselors were asked to describe their clients' stories visually, the narratives became accessible to the students and, importantly, counselors were able to work beyond their pragmatic advice as critics and commentators to *show* what they meant in some detail and nuance. This extends the insights they articulated in response to earlier student visualizations (Addendum B) and advances the NTFP counselors from critics to co-creators.

Although we can to some extent form mental images in our heads, we do much better when those images are out in the world, on paper or computer...etc., which all help us to solve problems through the process of visual thinking

(Sørensen, 2013 on Ware, 2008, p. 6)

In seeing the counselors' mental images, VFC students were able to align their visual thinking with that of NTFP content experts: the counselors. This illustrates Sanders's claim that the visual is often ambiguous: a term we substitute here for "indeterminate". Because counselors were instructed to interpret a passage from Emma's Story using visual means, the resulting work was exploratory, incorporating unedited subjectivities and unconscious ideas that may never have been articulated in a written response.

What do all these [generative] tools have in common? They take advantage of the visual ways we have of sensing, knowing, remembering and expressing. The tools give access and expression to the emotional side of experience and acknowledge the subjective perspective. They reveal the unique personal histories people have that contribute to the content and quality of their experiences. These are qualities useful to those of us involved in making people-centered decisions.

(Sanders, 2000, p. 10)

The counselors' visualizations that were collected did not yield new insights into the specifics of Emma's story. However, they did help significantly in moving the project forward in several ways. Firstly, as the counselors drew and talked about what they were illustrating, they communicated empathically with the students, allowing the students to experience Emma's journey through the counselors' eyes (and emotions) rather than simply relying on the counselor's expertise for feedback. Secondly, the students were better able to grasp Emma's story in a visual way. The visual language employed communicated more effectively to them than previous class readings, written feedback, or the text of Emma's story, giving students a deeper understanding of the financial dilemmas experienced by low-income individuals. This exemplifies the way that narrative visualizations improve emotional connection to content by presenting contextually- and metaphorically-rich stories, as discussed in Fry, Wilson & Overby, 2014.

An additional benefit was that students, in viewing and responding to the counselor's narrative visualizations, were able to reflect on how NTFP's clients might ultimately respond to *the students'* finished work. This meta-understanding of what worked and didn't in the visual narratives, improved their pragmatic comprehension of Emma's decisions; we would consciously emphasize this reflection in future generative-design iterations.

In short, it was only when the counselors were asked to describe their clients' stories in a visual language that these stories became accessible to the students. Their examination and discussion of the counselors' visualizations resulted in a much more reflective understanding of the financial circumstances of Emma's life. This deeper understanding was evident in the frame-by-frame story lines (example in Figure 10) created by students on April 22 to map Emma's decision process: here, her dilemma over taking two weeks' absence from her job.

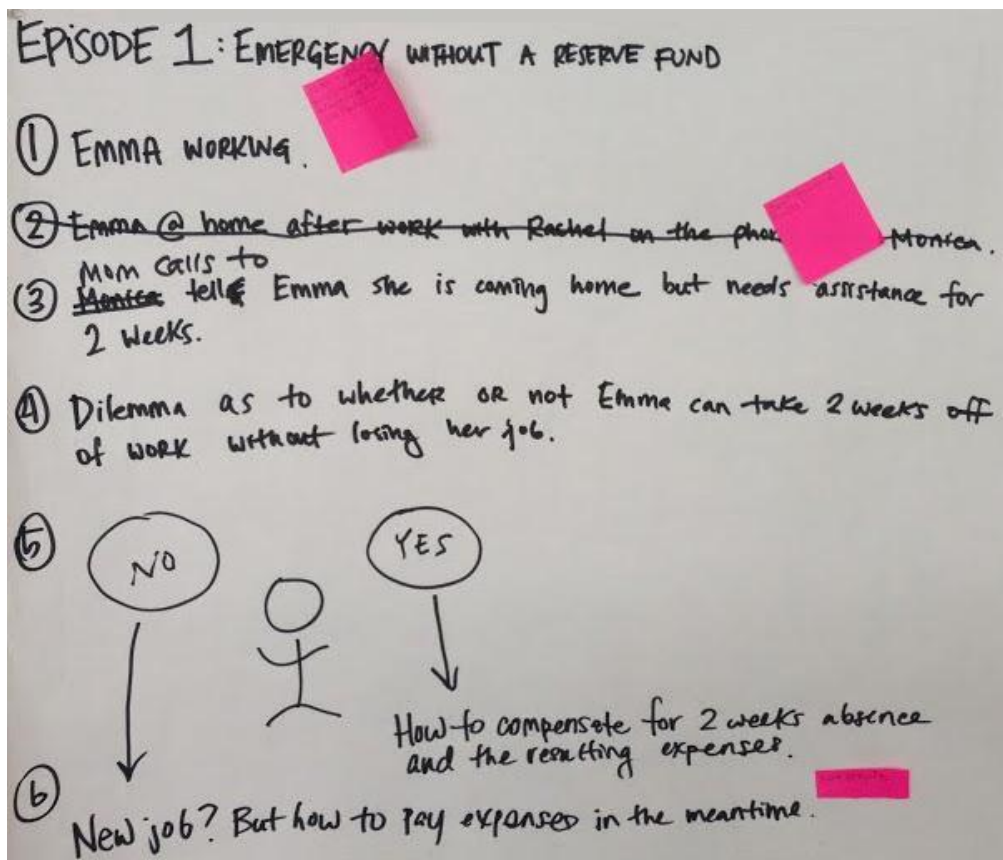


Figure 10. Draft of a frame-by-frame story line from April 22 (Week 12) class with sticky-note student commentary.

Students were now, finally, able to generate plausible and empathetic narrative lines and scenarios, and were able to create more-relevant and nuanced characters in the narrative visualizations (as evident in Figure 3). The exercise of extrapolation (from the factual information about Emma's circumstances to understanding of her constraints and emotions) would not have been possible earlier in the course. It resulted substantially from the generative-design exercise with the counselors and the ensuing conversations, through the counselor drawings, about the specifics of Emma's circumstances.

Conclusion

We propose the generative-design methodology of eliciting visualizations “from the source” as a very economical way of creating characters and storylines that will engage the intended end user. The creation of effective visually-based Financial Literacy materials is extremely complex, with many concepts that must be understood: behavioral economics, cultural authenticity, visual storytelling, compositional techniques; also which financial decisions and consequences are most common and most important to intended clients. The technique of eliciting visualizations from first-hand sources who already have a deep understanding of many of these concepts provides an invaluable “jump start” for the designer’s compositions and represents a truer collaboration than verbal and written research methods and communications. Narrative visualizations and new media have proved effective in communicating financial literacy (Lusardi et al., 2015); it makes sense that the same tools would be effective in communicating similar complexities between community partners and students.

While the email exchanges and feedback from questionnaires were helpful in sourcing specific information and assessment from the NTFP counselors, the narrative visualizations created by the counselors in the generative-design workshop was by far the most successful means of communication between the counselors and the students. By directly employing narrative-visualization strategies, the counselors were able to

1. experience directly the difficulty of the artists’/students’ task.
2. communicate greater depth of information through details of setting, character, body language, and dialogue.
3. communicate implicit assumptions, ideas and emotions through use of visual metaphors.
4. engage a deeper level of empathy and emotional response.

For their part, the students were better able to grasp the complexities of Emma’s life experiences, and to envision how they might themselves use visual tools to develop their comics.

Interest in working with community organizations continues to grow in design education, spawning new models of partnerships and co-design strategies. These models could be significantly enhanced by the development of efficient and effective visual strategies for communication. While the goal of most of these partnerships is not necessarily the production of narrative-visualization materials, this case study suggests that narrative visualizations might serve as an effective way for community partners and design students to co-design by sharing their ideas and exploring their consequences visually.

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Addendum A

Questions for advisor partners

Please answer questions 1 and 2 ONLY for the comic strip produced by your assigned group:

1. Assessment

- a. Is the problem shown here important to your clients?**
- b. Is the message clear and understandable?**
- c. Do you think your clients could relate to the character?**

2. Suggestions

- a. How can we make the problem more relevant and realistic?**
- b. How could the characters' actions and decision processes be more realistic and relevant?**
- c. How could the process/solution be more engaging, realistic, or useful?**
- d. How could the visuals be more relevant, realistic, and engaging?**
- e. Do you have other suggestions to improve this?**

Addendum B

Questions about “entrepreneur” comic

1. Assessment

a. Is the problem shown here important to your clients?

Soooooort of. There’s several issues at play here:

i) She has a steady job

ii) She wants to leave this job for her own business, which is an extremely complicated issue. As an advisor, I need to know what experience she has, if she’s thought about costs vs. expected income, if she has a partner(at home, not at the business) who has income to help support the family in the case of the business not working out or in the early stages...that is to say, this is not a straightforward thing at all and it is often the case that I recommend someone keep their day job if this came up. *That being said*, most people are so far from opening up their own business that this isn’t a very realistic or common issue to have to deal with. She probably has no savings and no credit. My goal would be to get her to save and build credit, after which she might not even be interested in leaving her job once she realizes how much she has to risk by doing it(if she sees how her current job gave her the ability to save so much, for example). Also, I work in a credit union. They look at the same stuff when offering a business loan. If this woman has no experience, very limited/no/poor credit, etc., she’s going to have a tough time getting a small business loan anyway.

b. Is the message clear and understandable?

Not really. A lot of our clients would be eligible for subsidized child care. Some of the phrasing used would be confusing for clients as well. “Ego depletion,” for example.

“More manageable with income” also makes no sense to me. Also Emma seems to

change race three times in this strip which is a bit confusing. And I don’t know why a Dominican woman would open a Mexican restaurant...

c. Do you think your clients could relate to the character?

Again, sort of. I’d stick more to the story of Emma as per the class. General what clients want is *more* stability. “I don’t want to be living paycheck to paycheck” or “I want to get out of debt.”

2. Suggestions

a. How can we make the problem more relevant and realistic?

The other comics we had seen as examples were very good at showing clearly a change the person would have to make. For example, *these are the things you should be doing when planting corn*. This visualization would do a lot better I think if it focused on showing our clients something they might not be familiar with. *This is how you set up split direct deposit to two separate accounts at two different institutions and how this ultimately helps you to save* or *This is how you rebuild your credit by getting a secured credit card*(How does that work? Very confusing for our clients!), *using it once a month, and paying off the balance in full*.

b. How could the characters’ actions and decision processes be more realistic and relevant?

See above. Smaller changes, more detailed!

c. How could the process/solution be more engaging, realistic, or useful? See above.

d. How could the visuals be more relevant, realistic, and engaging?

The visuals are very confusing. See above. Having the same character represented by the same person, introducing new characters and their relationship to the main character a bit more clearly, having things explained a bit more thoroughly. For example, *how* is Mr. Happy going to help Emma? Also, would Snidely Whiplash, a well-trained loan officer at such a serious and professional financial institution as Chase, ever so clearly admit age-discrimination in his loan rejection?

e. Do you have other suggestions to improve this?

I’d honestly change the entire thing, taking into account the response to 2a. The other examples I saw honestly suffer from a lot of the same issues, so if someone were to change in the direction mentioned above(detailed steps on how to make a change our clients might have trouble doing on their own or lack experience seeing in action) it would be far and away the most useful in my opinion. Our clients avoid doing a lot of the suggestions we have for them because they avoid the unfamiliar. These comics could help by making the steps familiar and something they’ll already have seen when they go to take them themselves.

Addendum C

InfoEmotion Matrix

| | | Visualization element | | | | | | | | |
|-----------------|--|-----------------------|------|--------|----------|---------|-----------|----------------------|------------------|------------------|
| | | Graphs/ Maps | Text | Dialog | Metaphor | Setting | Character | Facial expression | Body language | Tone of voice |
| Content element | Financial : data and information | | | | | | | | | |
| | Financial : concepts | | | | | | | | | |
| | Behavioral : decision processes | | | | | | | | | |
| | Behavioral : culture | | | | | | | | | |
| | Behavioral : ethics and consequences | | | | | | | | | |
| | Behavioral : emotion | | | | | | | | | |

For the assessments of visualizations described in this paper we adapted the InfoEmotion Matrix to accommodate the comic-strip format: no graphs/maps or financial data are included, and tone of voice is expressed through typography.