Abstract

Learning kanji is one of the biggest challenges faced by students of the Japanese language. This study introduces and examines a kanji teaching and learning resource that combines storytelling and visual mnemonics in an animated manga (comic book) that students can view both online and in print form. The manga incorporates the kanji, both visually and semantically, into a narrative that is meant to be both educational and entertaining. Student evaluations of the resource were analyzed from a qualitative perspective for perceptions of efficacy for learning, effect on motivation, and enjoyment. Findings indicate that while most participants evaluated the resource positively for graphics and multimedia enhancements, there were some issues that detracted from the efficacy of the learning material, including comprehension of particular kanji and the artificial nature of the plot.

1. Introduction

Learning kanji (Chinese orthographic characters that form the basis of the Japanese writing system) is one of the biggest challenges faced by beginning students of Japanese language. A visual symbol, its meaning, and at least one but usually two or more readings must be memorized and available for immediate retrieval and reproduction. In most North American university-level beginning Japanese courses, a student must learn between 100 and 175 characters in the first year. This requires a considerable amount of dedication, time, and cognitive resources. Some students are drawn to the study of Japanese by their fascination with the written language, and these students tend to be happy to devote the time required to learn the characters, but for others, the memorization of kanji can become a frustrating challenge that impacts their levels of motivation and impedes their chances of
success in the course. While rote memorization and repetitive writing are generally seen to be necessary for the learning of kanji, supplemental resources that can engage and entertain the student may help to ease the load of learning a large number of characters.

This supplemental kanji learning resource was initially envisioned as a way to take advantage of multimedia affordances and online technology in order to help those students who have little or no previous knowledge of kanji. This is done by means of engagement with a learning resource in the form of a multimedia manga, or Japanese-style comic book, based on the use of visual mnemonics associated with the kanji. The resource is meant to work on both cognitive and creative levels and also take advantage of the passion for manga that draws many students to the study of Japanese language.¹ The aim of this online multimedia resource is to give students some visual and cognitive tools in a format that is enjoyable and engaging as a supplement to traditional rote memorization and repetitive writing methods.

2. Background to the research
2.1 Mnemonics
While cycling in and out of fashion, mnemonics have long been used as an aid in learning second languages. Atkinson (1975) argued that his keyword method for acquiring new vocabulary, where associations are made between pronunciation, translation and visual images, was particularly effective for beginning and lower-proficiency learners. Paivio & Desrochers (1979) showed that the “hook” mnemonic system, where new vocabulary is associated to numerical peg words via images, was more effective than rote memorization. Resources employing visual mnemonics to help learn the Japanese writing system have been widely available for many years (Makino et al. 1998; Rowley 1992), attesting to their perceived usefulness among the teaching community. In addition to visual mnemonics, narrative mnemonics, where learners construct a story around a particular character or its components, have also been used effectively by learners of Japanese. Examples of this type of approach include Heisig’s Remembering the kanji (1977)
and Smolensky’s *Kanjichain* (1995). However, some studies have questioned the efficacy of the mnemonic approach. For example, in their study of students’ long-term retention of Chinese characters learned through imagery-based mnemonics, Wang & Thomas (1992) found that using visual mnemonics to learn kanji resulted in better performance in immediate recall, but not in long-term retention. The efficacy of visual mnemonics, therefore, may depend on a significant investment of cognitive resources and a longer-term engagement with the images.

2.2 Student approaches to learning kanji

Students’ beliefs and perceptions of what works for them in their study of orthography vary. Wang & Leland (2011) report that L2 students studying Chinese characters perceived that repetitive copying of characters facilitated the recognition of both form and meaning. Students also perceived that listening to texts and practicing characters in a meaningful context strongly facilitated learning character pronunciation and meaning. Mori & Shimizu (2007) found that students employed five major word learning strategies, including rote learning, contextual strategies, morphological analysis, association strategies (mnemonics) and metacognitive strategies, and that students perceived rote memorization to be the most effective way to learn new kanji. At the same time, they also found that rote memorization strategies correlated strongly for students who found the learning of kanji to be difficult. On the other hand, students who found the learning of kanji to be fun were more likely to rely on morphological analysis and association strategies like mnemonics.

2.3 Multimedia instruction

Multimedia instruction is the use of words, in printed and/or spoken form, and pictures, in static and/or dynamic form, to design presentations in ways that help learners construct mental images (Mayer 2001, cited in Plass & Jones 2005). Mayer (2005) proposed several basic principles for effective multimedia learning, predicated on the idea that people learn better from words and pictures in
combination than from words alone. Basing his discussion on Paivio & Begg’s (1981) work on dual-coding, Mayer discussed the advantages of using multimedia to deliver information simultaneously through both of the independent yet interconnected auditory and visual channels. While there are limits to the amount of information that can be processed in each channel at one time, the effect of having information coming in simultaneously from both channels is additive, and as a result, people learn better from graphics and audio narration than from graphics and printed text. Furthermore, Mayer concluded that narration in a conversational rather than a formal tone is more effective for comprehension.

Plass & Jones (2005) point out that a multimedia format can be used to increase the likelihood of a learner noticing and focusing on the target structures and vocabulary of the language being studied. Examples of multimedia input enhancements include glossing with audio, textual, pictorial, and video annotations, and highlighting. Chun & Plass (1996) found that, in second-language multimedia environments, pictorial rather than textual annotations facilitated the acquisition and retention of vocabulary, further strengthening Mayer’s claim regarding the efficacy of using both words and pictures to promote effective learning.

3. The present study
Despite some evidence pointing to the questionable efficacy of image-based mnemonics, it was hypothesized that a multimedia combination of mnemonics and manga might sustain a level of interest and engagement among students sufficient to act as a useful supplement to traditional study methods. The present study emphasizes student perceptions and evaluations of the material and investigates whether learners feel that this mnemonic-based animated manga is an effective and engaging resource that aids them in the recognition and memorization of kanji forms and meanings.
3.1 Participants
Eighteen volunteer subjects, ranging in age from 17 to 24, participated in the study: ten participants from first semester and six from third-semester beginning Japanese language classes taught by the researcher, and two students from a final year high school Japanese language class. The participants involved in the interview procedure came from a range of linguistic backgrounds as is evident from the information in Table 1 below.

<table>
<thead>
<tr>
<th>Pseudonym</th>
<th>Language background</th>
<th>Year of study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nancy</td>
<td>Indonesian, Japanese</td>
<td>2</td>
</tr>
<tr>
<td>Seiji</td>
<td>Russian</td>
<td>2</td>
</tr>
<tr>
<td>Bea</td>
<td>English</td>
<td>2</td>
</tr>
<tr>
<td>Chandler</td>
<td>English</td>
<td>2</td>
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<tr>
<td>Daniel</td>
<td>English</td>
<td>2</td>
</tr>
<tr>
<td>Marie</td>
<td>English</td>
<td>2</td>
</tr>
<tr>
<td>Noelle</td>
<td>French, English</td>
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<tr>
<td>Sara</td>
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<td>1</td>
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<tr>
<td>Jane</td>
<td>Korean</td>
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<tr>
<td>Akourah</td>
<td>English</td>
<td>1</td>
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<tr>
<td>Amy</td>
<td>English</td>
<td>1</td>
</tr>
<tr>
<td>Andrea</td>
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<td>1</td>
</tr>
<tr>
<td>Andy</td>
<td>English</td>
<td>1</td>
</tr>
<tr>
<td>Mark</td>
<td>English</td>
<td>1</td>
</tr>
<tr>
<td>Nigel</td>
<td>English</td>
<td>1</td>
</tr>
<tr>
<td>Warren</td>
<td>English</td>
<td>1</td>
</tr>
<tr>
<td>Astrid</td>
<td>English</td>
<td>High school</td>
</tr>
<tr>
<td>Megan</td>
<td>English</td>
<td>High school</td>
</tr>
</tbody>
</table>

The volunteers had varying levels of knowledge of elementary kanji, depending on their year of study and their own level of individual interest and effort. Most participants reported repetitive writing as their primary activity for learning kanji.

3.2 Materials
The multimedia resource is based on the kanji that students are required to master for selected chapters from the beginning Japanese textbook, *Genki: An integrated course in elementary Japanese*, by Banno et al. The required kanji for each chapter are organized into a narrative and incorporated into an animated manga with audio
narration that students can view online. In terms of creating a believable and integrated narrative, a more systematic and less arbitrary approach for choosing kanji for inclusion in the manga would be ideal. However, the manga is meant to be supplemental learning for this particular textbook, therefore the kanji included in each installment are restricted to those appearing in the textbook chapters (see Appendix 1 for a complete list of the kanji used). Each chapter contains approximately 15 new characters. As is the case with most beginning Japanese textbooks, the first kanji introduced are numbers, days of the week, and other higher frequency pictograms and ideograms. Compounds and more complex characters are introduced progressively in subsequent chapters. In an attempt to avoid cognitive overload for first-time learners of kanji, the initial objective of the project was to introduce students to new characters in a way that would help them make a connection between form and meaning only. To this end, the first version of the manga was produced in English, and the Japanese pronunciation of the characters was not included. Van Aacken (1999) cites evidence from both sides of the argument regarding whether non-kanji background students should be introduced to all three elements of new kanji (form, meaning and sound) at the same time, but pedagogical considerations as well as technical limitations at the time led the producers of the project to create the manga in English only. (However, the project was later expanded to include a Japanese-language version of the multimedia manga for a limited number of episodes in order to help students with the Japanese pronunciations of the characters, so by using both the English and Japanese versions in conjunction, it is possible for students to get reinforcement of form, meaning and sound.) A supplemental static version of the video, which can be read online or printed as a hard copy, is also available (see Figure 1). The story for each chapter generally uses the same cast of characters, who, like most conventional manga characters, do not look particularly Japanese. The settings for most of the stories are based on a Japanese cultural context, and in some cases the characters have been incorporated into stories from traditional Japanese folklore. Kanji in standard font appear in the manga with a picture and story created around them. The image is
meant to reflect the meaning of the kanji, whether in a straightforward visual manner (a pictogram) or as an association of a concept (an ideogram). More complex characters are included as the textbook chapters progress in the level of difficulty, and as much as possible, the component parts of compound characters are represented in a unified and related way. For example, the ninben radical is represented as a person, and the hitsujii radical is represented as a sheep in most of the storylines.

Figure 1. An example of a page from the printed manga

The manga is produced on a tablet computer using specialized, layered manga drawing software. The animation effect, which makes the drawing “appear” out of the kanji, is produced by creating a screen recording of the drawing process. Through the use of layering, the colour of the kanji changes from black to red when the word it represents appears in the narration. In the print version, the word in English or Japanese is underlined in the speech bubbles. The narration is recorded using a freely available sound recorder. Each page of the manga is recorded separately and then edited and merged together into one video clip using a free movie-making software programme. The final product is uploaded as a YouTube
video available to students on the Internet.

3.3 Procedure
The observations of and interviews with the student participants were conducted in the investigator’s university office. In order to test pre-existing knowledge and immediate recall of the kanji in the manga, the investigator administered pre- and post-treatment tests that measured the participants’ ability to match the required kanji for the textbook chapter with their associated meaning in English. However, a quantitative analysis of the results of those tests will not be included in the current discussion, which will focus instead on the students’ perceptions of the material. Participants viewed the online manga while the researcher observed. The high school and first year students other than the Japanese heritage speaker viewed only the English version of the animated manga. The Japanese heritage speaker and the volunteers from the third semester class were shown episodes with a Japanese-language narration in addition to the video with English narration. Different participants viewed different episodes depending on the level of the class in which they were enrolled. Participants were instructed to use the video in any way they liked, including stopping and repeating where desired. In two cases, the manga was viewed in pairs and the interaction of the participants was not observed in person but was video-recorded. Participants were also given time to read at their own pace a paper version of the manga. The researcher then conducted audio-recorded interviews regarding the participants’ reflections on the learning resource. In general, a prepared script was followed (see Appendix 2), but participant responses determined the direction of questioning. The total time for interviews ranged from seven minutes fifty seconds to twenty-three minutes twenty-six seconds, averaging approximately fourteen minutes thirty seconds. The interviews were transcribed by a third party. The researcher then analysed and coded the data for indications from the participants of their level of engagement with the learning material, and the extent to which they found the material effective in their learning of kanji. Several common themes emerged during the course of the interviews, and these are
discussed below.

4. Findings and discussion

4.1 Graphics and storyline

O’Brien & Toms (2008) conclude that, in addition to other attributes such as challenge, positive affect, and novelty, the aesthetic and sensory qualities of human computer interaction are important for engagement. The creators of this kanji manga project intended to engage students in the learning material through its graphics and storyline, and to a limited extent this was successful. The resource was described several times by participants as “funny” and the animated “drawing” of the story as “cool.” Comments on the artwork itself ranged from “fan-girlish, like someone drew when they were fifteen,” to “pretty close to professional,” but in general the graphics were evaluated positively by most participants. As Kapp (2012) points out, the use of compelling graphics in digital games contributes to the player’s experience, and the same can be said for graphics in other multimedia materials.

Considerable effort was put into creating the stories, and some students, like Andrea (all names are pseudonyms), reported that “the story made sense, actually, it tied all of those things together, so it was good.” However, some of the participants commented that the plots were contrived and would not in themselves motivate a learner to watch or read the material. Nigel states, “The story was all right, it kept you interested enough to keep focusing on the kanji, but in general it’s not too interesting.” Andy adds,

It’s not interesting at all to read, to be honest. But, it doesn’t have to be if you’re learning. I mean, it’s obviously more fun to learn kanji using this.

While the original intention of the researcher was to create a resource that would sustain interest and motivation for students who like and appreciate the art and storylines of manga, the resulting material is apparently sufficient to keep their attention as a learning resource, but not necessarily as “entertainment” by which
students might either consciously or incidentally learn kanji. The lack of engagement with the storyline may be related to the challenge the author of the manga experienced in creating a cohesive and believable story out of kanji that have been arbitrarily put together to satisfy the curricular needs of a particular textbook. Because this pedagogical material was created to help students achieve learning outcomes based on a particular textbook, the story had to be created within these constraints. This challenge meant that the author had to incorporate kanji as visually and semantically diverse as, for example, 起 (ki; to wake up), 神 (kami; god), and 色 (iro; colour) (from Genki 1, Chapter 12), resulting in a storyline that might not always progress as smoothly or logically as desired. Marie’s comments illustrate this difficulty when she states,

Suddenly, a kanji doesn’t really fit with the rest of the story - it’s like, “Why is that there?” And you kind of get fixated on that, instead of paying attention to the story.

On the other hand, an illogical, unpredictable or eccentric plot can in some respects act as a better memory aid as “quirkiness” may cause the target material to become more salient or noticeable (Smolensky 1995). As Marie states above, she becomes fixated on certain kanji if they don’t fit the story, but this fixation may in fact lead to better retention. Warren also notes,

I think having the occasional awkward or bad panel will improve the students’ ability to retain it, because if the students see a mistake in something that’s drawn, or they think it’s bad or corny, then they’ll remember it, like they remember a joke. So I think that may be more effective.

Finally, as a learning resource, the material appears to be appreciated by students who are not particularly attracted to manga in general. After Noelle states that she is not a manga fan, she adds,

But it makes it more interesting to learn, for sure. It’s a good way to learn, you’re not bored. You just watch it and it actually goes in even if you don’t really realize it.
Noelle indicates that she believes incidental learning is occurring, but the issue of whether “it actually goes in” and is retained long-term is still to be determined by a rigorous quantitative analysis.

### 4.2 Efficacy of the mnemonic images

Not all of the mnemonics were effective for all participants, and subjects varied in their opinions of which were effective or memorable for them personally. For example, the mnemonic for “fish,” incorporated within an image of a fish (Figure 2) in the Chapter 15 manga, appeared to be very effective as it was recalled easily by all participants who viewed it. This direct pictographic image-to-meaning correspondence seems to be, not surprisingly, the most effective. Andy articulates this when he says, “I’d only include kanji that actually looks somewhat like the meaning, or you could easily remember by their meaning,” and this observation is reflected in the literature that shows that mnemonic methods are more effective for concrete, high-imagery words than abstract words (Paivio & Desrochers 1979; Kuo & Hooper 2004).

Figure 2. “Fish” mnemonic

On the other hand, several images were mentioned as being effective for some students and confusing for others. For example, the mnemonic image for “heaven” (Figure 3) in Chapter 5, depicting a person ascending to the clouds, was specifically effective for Andy, who said “I couldn’t bring anything to how that was “heaven” until I saw that [mnemonic]. I’ll probably remember that all the time now.” However, the image caused a misunderstanding for Akourah, who thought it meant
“ascending.” This confusion arose because the words “heaven” and “ascending” occurred in close proximity in the audio narration. The print version, where the words represented by the kanji mnemonic are underlined in the speech bubbles, eliminates this problem.

Figure 3. “Heaven” mnemonic

Finally, several participants commented that more complex kanji that were made up of different components and images were not easily recalled, especially if the mnemonic seemed to have a tenuous connection to the meaning of the kanji. The mnemonic for the character for “wake up” (Figure 4) in Chapter 12, is an example of this issue, as the attempt to incorporate the character into the manga’s storyline resulted in a somewhat artificial connection of image and meaning.

Figure 4. “Wake up” mnemonic

More study is required to determine what specific kanji are most effectively communicated through this type of mnemonic device, but it can be concluded that the effectiveness of particular mnemonics for particular individuals is related to the
perspectives, personal experience and mental connections they bring to their interaction with the kanji manga.

4.3 Multimedia enhancements

Most students acknowledged the changing of the colour of the kanji from black to flashing red when the meaning or pronunciation occurred in the narration as a positive enhancement. Megan notes,

… with the colour changing of the kanji, kind of like an alarm, alert, alert, this is what you’re supposed to be paying attention to, it kept me from staring at just how cute the picture was. It got me right on the kanji.

However, several students expressed concern that in some cases it was not clear to them which word in the narration corresponded to the flashing red kanji. Bea states,

So if you knew the kanji already, then you knew where in the sentence it was when it was flashing… but then there were others where I didn’t know it, so I was like, what part of the sentence is this?

While every attempt was made to synchronize the enunciation of the English word with the flashing of the character, it appears that there was confusion over the meaning of some of the characters, with participants specifically mentioning 天 (ten; heaven), as noted earlier, and 行 (iku; to go). 行 was incorporated into a drawing of converging roads, and was confused with the word “way” (Figure 5).

Figure 5. “Iku” mnemonic

Several students stated that they especially liked the static version of the
manga because they could connect the kanji and its meaning through the underlining in the text. Noelle states,

They’re very straightforward. You open it, you see the character in red, and then the explanations are underlined.

Many students expressed a desire to have the meaning explicitly and obviously connected with the kanji in the video, and several suggested that textual annotations or verbal repetitions be added to make the connection clear and unambiguous. Unambiguous textual translation can be especially important for lower-ability learners who may experience increased cognitive load when dealing with images that need to be interpreted (Plass et al. 2003). There is little tolerance on the part of students for guessing from context, nor should there be in a resource where the purpose is to teach specific form and meaning connections.

However, several students commented that using both the static and dynamic versions in combination would be effective, as demonstrated by the following exchange between second-year students Daniel and Chandler. They have already watched the video in English, and are looking at the English paper version while simultaneously listening to the Japanese narration.

Daniel: I think it would definitely help to flip through it [the English version] so you can get what each of them is, even if you don’t know what the word is in Japanese you can be like, this one is talking about meat, and then you read it and you’re like, I see — this is exactly what it’s talking about, and then listen to it in Japanese and you’re like, oh niku [meat]! Got it! So definitely reading it would be good first.

Chandler: Reading it, watching it in English, and then watching it with Japanese.

A process such as this would reinforce the image and audio cues with textual translations, helping to establish a strong mental representation of the meaning of the kanji.
4.4 Cognitive load
Sweller (2005) discusses the implications of cognitive load theory for multimedia instruction and stresses the importance of balancing technological enhancements with the brain’s capacity for processing new information. Each episode of the manga contains approximately fifteen new kanji, so the demands on cognitive resources are high. If learners use the resource as review material after the kanji have been rehearsed in isolation, the images tend to reinforce previous knowledge. However, if they are encountering the kanji for the first time, and do not take the time to rehearse or interpret the image, there is a high possibility that the mnemonic will not be retained in long-term memory. Noelle, quoted above, may think that that kanji “goes in” without her realizing it, but in fact it may not without further effort.
Most participants in the present study agreed that the number of kanji presented and the length of the video was appropriate for them, but some, like Astrid, a high school student with less previous knowledge of kanji, noted that the speed was too fast. “The kanji is drawn really quickly and it just kind of flashes and it’s gone, so you’re like ‘What was that?’” Some participants suggested that the story be broken down into smaller chunks to aid in understanding and retention.
Participants were also questioned about their perception of the animated “drawing” process and whether that contributed to increased cognitive load. Most participants characterized the drawing process as “cool,” but there were differences in opinion regarding a potential distracting effect. Nigel notes, “The artwork and the kanji are in very different shades. The kanji come out in these big, dark, bold shades, so, as soon as the kanji show up, you’re pretty much distracted by the kanji versus the drawings.” Andrea also commented that the drawing effect “made you think about what was going on.” However, Akourah expressed some concerns about the animation. “Maybe it is because it was moving… It was really cool to watch, though, but, like, maybe that was a little bit distracting.” This distraction could possibly impede uptake of the audio cue to some degree.
While this resource is not strictly “animation” in the conventional sense, it is worth noting research concerning the possible deleterious effects of animated
learning resources. Tversky et al. (2002) showed that animation that is too fast or too difficult to apperceive may have negative effects on learning, especially for viewers with little prior knowledge. Lowe (2003) also found that animation might impose excessive information processing demands, leading to a reduction in cognitive resources available for and engaged in actual processing activities. Bea articulates this problem when she says, “The fact that it’s being drawn means you’re forced to look at it for a certain amount of time…and at the same time, sometimes the drawing is too complicated, so all you’re doing is watching the drawing, so you’re not actually looking at the kanji.”

The type of animation used in this particular resource might be considered the graphic equivalent of what Garner (1989) called a “seductive detail,” the addition of interesting but unimportant information to a text. Seductive details may negatively impact comprehension, especially for low-proficiency or novice learners. At the same time, there may also be a positive aspect to seductive details in terms of their motivating effects. Park et al. (2011) found that the seductive details in their animation led to increased engagement and investment of cognitive resources on the part of the students. The participants in the present study who characterized the appearance of the image through animation as “cool,” “fascinating,” and “(keeping) me on the picture,” may be investing more cognitive resources due to their engagement with the artwork. Further investigation needs to be undertaken to establish if the motivating or entertaining effects trump issues of cognitive processing.

### 4.5 Self-generated learning materials

This learning resource was also conceived as a potential stimulus for students to enlist their own creative talents in the production of self-generated mnemonics. While Wang & Thomas (1992) question the long-term retention of instructor-supplied mnemonics, they do propose that retention can be improved if the mnemonic is subject-generated. Kuo & Hooper (2004) also found that students who generated their own mnemonics showed both increased time-on-task (which also
implies increased time to completion) and significantly higher results on post-tests. While some participants in the current study found the idea of creating mnemonics uninteresting or unhelpful, others indicated that they could see a possible advantage to creating their own images, and some already do use this methodology to different degrees of success. Nigel states that it works for him, but “Sometimes the kanji are just so complicated, it’s hard to tie something to it.” However, the effort taken to try to put a story together around a complicated kanji could pay off in increased retention due to extended time-on-task. Nikolova (2002) showed that when time-on-task was not taken into account, students who produced their own multimedia vocabulary study material achieved acquisition rates significantly better than students who used teacher-supplied materials, so this kind of active engagement with and creation of the learning material may be beneficial for the retention of form and meaning of the kanji. However, less-than-highly motivated learners may not be willing to invest the time required. As Astrid notes,

I have an artistic mind, but it’s hard for everyone to come up with their own pictures that will go well and actually have a story that will make sense. You’d spend so much time trying to figure out a picture that made sense with a story that you’d actually remember that you wouldn’t get your homework done.

Marie also comments on the difficulty of making one’s own mnemonics, and observes that this could be ameliorated by working in groups, as was done during one class.

I tried (creating mnemonics) over the summer, and I’m not very artistic. Some of them helped me, but sometimes it is so hard to think of a story. I think having it in a group setting helps a lot more, because some people will think differently, and then once they give that perspective, it’s like “Wow, why didn’t I see that?”

Wang & Leland (2011) also found that students perceive that group study of Chinese characters was beneficial, so further initiatives that incorporate group work in the creation of mnemonics may be warranted.
4.6 Access preferences

Easy access to the materials was a significant issue for participants. Several stated that they would use the resource if it were readily available, but may not take the time to seek it out if it required too much effort. However, what is deemed “accessible” varies between students. For some, direct online access is important. Marie comments on the easy access for YouTube videos and notes that the videos can also be viewed on an iPod or smartphone. However, students must be made aware of the tags in order to search for them efficiently. The YouTube videos are also linked on the course management system, but initially students had to navigate through several layers in order to reach them, and this proved to be a deterrent. Other students preferred a paper version that they could carry with them. The paper version was also posted outside the classroom, and Bea commented that this was an effective method of reaching her. “I think you have to put them in places like that where people are waiting -- I had nothing to do, so it’s like, I’ll just read these.” In addition, as Noelle points out, “You have to listen to the whole video, but the paper version you can read what you want,” so students who are using the manga selectively may feel one option is more suited to their particular study habits and preferences, and this option must be readily available.

5. Conclusion

Table 2 summarizes the main themes emerging from the students’ experience with the animated kanji video. Positive perceptions are listed in the left column, and issues that were not perceived positively are listed on the right.

While almost all participants evaluated the animated kanji manga positively in terms of its ability to engage their interest in the study of kanji, the material is not seen as a substitute for the repetitive writing and rote memorization that the majority of students feel are the most important and effective ways to learn characters. However, the animated manga can be employed effectively as a supplemental learning activity meant to enhance these traditional methods by engaging the students in the study of kanji through an alternative process. Ideally,
supplemental study would be augmented with additional online or class activities and exercises based on the manga in order to aid retention of the images in long-term memory and deepen students’ engagement with them. (An example worksheet is included in Appendix 3.)

Table 2. Summary of student perceptions

<table>
<thead>
<tr>
<th>Positive perceptions</th>
<th>Perceived problems</th>
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<tbody>
<tr>
<td>More interesting than traditional rote-memorization methods</td>
<td>Storyline is not interesting for some students.</td>
</tr>
<tr>
<td>Artwork and animation is generally engaging.</td>
<td>The animation is distracting for some students.</td>
</tr>
<tr>
<td>“Quirky” kanji or storyline easier to remember.</td>
<td>Some kanji does not fit smoothly in the storyline.</td>
</tr>
<tr>
<td>Some mnemonics are very effective, but efficacy differs between</td>
<td>Complex characters or abstract concepts are hard to remember.</td>
</tr>
<tr>
<td>individuals.</td>
<td></td>
</tr>
<tr>
<td>The colour enhancement of the kanji is effective.</td>
<td>The kanji appears and disappears quickly in the online version, preventing effective uptake of meaning.</td>
</tr>
<tr>
<td>The paper version of the manga presents the meaning of the kanji</td>
<td>There was some confusion in meaning of kanji with words that occurred in close proximity in the narration.</td>
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<td>unambiguously, so using both the paper and digital version in combination is effective.</td>
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<tr>
<td>Some students were inspired to create their own memory aides.</td>
<td>Creating individualized, personalized mnemonics may take too much time.</td>
</tr>
<tr>
<td>Group collaboration in the creation of mnemonics may be helpful.</td>
<td></td>
</tr>
<tr>
<td>The length of the manga and the number of kanji included is</td>
<td></td>
</tr>
<tr>
<td>appropriate.</td>
<td></td>
</tr>
<tr>
<td>Access on computer or smartphone is convenient.</td>
<td></td>
</tr>
<tr>
<td>Having paper version available in the classroom or areas where</td>
<td></td>
</tr>
<tr>
<td>students gather is convenient.</td>
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</tbody>
</table>

The story and some of the mnemonics act as effective memory aids for some students, but their use and understanding varies greatly among individuals. Images that are not unambiguously connected to a form and meaning are problematic, but issues in comprehension can be resolved by using a combination of digital and paper versions of the material. The comments of the research participants show that a kanji manga could be highly effective if it were limited to mnemonics for pictographic characters that depict concrete items. Needless to say, however, this puts restrictions on the number of characters that could be included, and makes it
more difficult to customize for particular textbooks or curriculums.

Students expect easy access to both static and dynamic versions through direct online paths and in various physical locations, and this preference can be easily accommodated through course management websites, the provision of YouTube URLs, and the posting of hard copies in the physical spaces that students frequent. Finally, the resource may act as stimulus for some students to use the methodology to create their own mnemonics, which may also be an effective way for individuals to make lasting connections between the form and meaning of kanji.

Notes
1. The *Kanji in Mangaland* series by Bernabe, Calafell, & Aldarab (2007) also uses manga to teach kanji, and the manga format has long been used in other contexts to teach Japanese language in general.
2. The *Genki* series includes the 145 kanji listed for the Grade 4 (at the time of text’s publication) and 172 kanji listed for the Grade 3 Japanese Language Proficiency Tests.
3. An example of the manga can be viewed at http://www.youtube.com/watch?v=5BL3F7Q5PNI
4. The software and applications used in the creation of the manga are Manga Studio Debut 4.0 (Smith Micro Software), BSR Screen Recorder 5, Audacity, and Windows Movie Maker.

References


Paivio, Allan, & Desrochers, Alain. (1979). Effects of an imagery mnemonic on


**Appendix 1. List of Kanji for *Genki: An Integrated Course in Elementary Japanese***

Chapter 3
一, 二, 三, 四, 五, 六, 七, 八, 九, 十, 百, 千, 万, 円, 時

Chapter 4
日, 本, 人, 月, 火, 水, 木, 金, 土, 曜, 上, 下, 中, 半

Chapter 5
山, 川, 元, 気, 天, 私, 今, 田, 女, 男, 見, 行, 食, 飲

Chapter 6
東, 西, 南, 北, 口, 出, 右, 左, 分, 先, 生, 大, 学, 外, 国

Chapter 7
京, 子, 小, 会, 社, 父, 母, 高, 校, 割, 語, 文, 帰, 入

Chapter 10
住, 正, 年, 売, 買, 町, 長, 道, 雪, 立, 自, 夜, 朝, 持

Chapter 12
昔, 々, 神, 早, 起, 牛, 使, 働, 連, 別, 度, 赤, 青, 色

Chapter 13
物, 鳥, 料, 理, 特, 安, 飯, 肉, 悪, 体, 空, 港, 割, 同, 海, 昼

Chapter 15
死, 意, 味, 注, 夏, 魚, 寺, 広, 転, 借, 走, 建, 地, 場, 足, 通

Chapter 18
目, 的, 力, 洋, 服, 堂, 授, 業, 試, 験, 貸, 図, 館, 終, 宿, 題

Chapter 21
信, 経, 台, 風, 犬, 重, 初, 若, 送, 幸, 計, 遅, 配, 弟, 妹
Appendix 2. List of potential questions for participant interview

How would you describe your learning style, or what kind of learner you are (visual, physical, auditory preferences)?

How do you go about learning new kanji?

In general, what do you think of manga, anime and comic books?

What do you think of the kanji manga?

Did you enjoy watching the manga?

What did you think of the story?

What did you think of the artwork?

Did the kanji seem to make sense in the context of the story?

Did you think the story was too long or too short?

How could we improve this manga?

Do you think watching the manga helped you to learn kanji?

Can you remember any of the kanji because of their pictures?

Do you prefer the animated version or the paper version? Why?

Did you prefer it in English or Japanese?

Did watching the manga give you any ideas about different ways to learn kanji?

Would you use this manga or ones like it again to learn kanji?

Would you recommend watching the manga to other students of Japanese?
Appendix 3. Example worksheet

Pick the meaning for the kanji in the mnemonic from the list below. Look up the pronunciations in your text and write them down.

six; one hundred; three; ten thousand; nine; round/yen; five; time