

THE PRACTICE OF MICROBLOGGING

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Abstract

This study reports on the use of the microblogging tool, Twitter, in an intensive English advanced grammar course in a higher educational setting. The author used the tool with 49 students over a 1-year period from September 2010-December 2011, producing more than 3500 tweets. Both quantitative and qualitative data were collected and triangulated. Results suggest that microblogging may be used to help students notice target language features by providing them with ample opportunities during input, output, and interaction, due to such factors as task structure, audience presence, mediating tools and corrective feedback exchanges with the instructor (Schmidt, 1990, 1993, 1995) . Further results suggest that microblogging may aid in the proceduralization of new grammatical constructions as well as long-term memory consolidation, particularly for visual learners.

Keywords: Microblogging, Twitter, Noticing, Corrective Feedback, Input, Output, Interaction, Proceduralization

Introduction

Since its arrival in 2007, Twitter, a popular microblogging service with over 200 million users who send more than 100 million messages, or *tweets*, per day, has been derided by some cultural critics for its potential to destroy, or ‘dumb down’ standard English grammar. Some argue that its bite-sized communicative space (140 characters) causes users to sacrifice normative grammar to communicate tweets, and thus hail this as a sign of language degradation. Independent journalist Stefan Sirucek says Twitter is where “grammar comes to die” (Sirucek, 2010). However, what if Twitter is not where grammar dies? What if Twitter is where grammar is transformed?

Twitter is an asynchronous, computer-mediated communication (CMC) tool, meaning people may communicate with each other, but most likely not at the same time. In particular, it is a microblogging tool. Microblogging differs from chat tools, such as Skype, AIM, or Yahoo! Instant

Messenger. Microblogging is not intended for chatting, although users do carry on short conversations (Honeycutt and Herring, 2009). Instead, the tweet is the heart of microblogging on Twitter, where each tweet can contain up to 140 characters, accounting for approximately 30 words, slightly longer than most English sentences. Originally, a tweet was a response to the question, 'What's happening?'. Content tended towards information sharing and talking about one's activities (Java, Finin, Song, and Tseng, 2007), but has since evolved. Recent journal studies and press coverage have demonstrated how Twitter is used during times of crises and emergencies resulting from natural disasters (Heverin, Thomas, and Zach, Lisl, 2010; Hughes, Lee, and Palen, Leysia, 2009; Lampos & Cristianini, 2010) to social activism and political organization (Grossman, 2009).

Each tweet is name, date and time stamped, recording the exact instant it was communicated and by whom. Tweets are displayed in reverse chronological order in a stream-like fashion and may appear in multiple places depending on privacy settings. If a user allows, their tweets can appear on the public timeline, a running stream of tweets by registered users observable by anyone. Conversely, a tweet's visibility can also be restricted only to those who *follow* the user. When you follow a user, their tweets appear on your home page and vice versa. This is how a social connection is established between users and is the core of microblogging and the Twitter experience. Tweets also appear on your profile page, which displays an accumulating stream of all the tweets you have composed. This three-avenue dissemination of a user's tweets into public, communal and individual spaces has led some researchers to call microblogging a *social awareness stream*, i.e., a quasi-public-private, strongly-connected, computer-mediated social space (Naaman, Boase, and Lai, 2010).

Twitter users have articulated a variety of ways to add a layer of cohesion to the "noise" of the update stream. One way is to thread conversations through addressivity by mentioning another user with the @ symbol followed by a username, e.g., @grammarexamples (Honeycutt and Herring, 2009). For additional cohesion, Twitter users engage in topic referencing, or *hashing*, by using the # symbol followed by a topic, e.g., #passivevoice. *Retweet* is another function that adds cohesion. Retweeting is like forwarding an email. In this case, you share a tweet someone you are following has made with all of your followers. These functions promote cohesive interaction between users.

Microblogging and Language Learning

Recently, with the development of quasi synchronous CMC forms, some educators have reported on their use in language classrooms, particularly microblogging and with a focus on community and cultural development. In one of the first studies, Antenos-Conforti (2009) used Twitter in an intermediate university-level Italian course, exploring students' habits on Twitter as well as students' perceptions of its benefits for learning about language and culture.

Questionnaires and surveys were administered. Antenos-Conforti found that the majority of students felt Twitter helped increase their confidence in writing in Italian, responded positively towards instructor feedback given through Twitter, and negotiated meaning through Twitter for vocabulary learning. Perifanou (2009) also used Twitter in an Italian foreign language class, analyzing from a sociocultural perspective its learning potential for authentic tasks, such as gaming in the classroom and digital story telling. Perifanou found that microblogging increased collaboration, motivation and participation, while having a positive effect on learning outcomes.

Additionally, Borau, Feng, Shen and Ullrich (2009) report on using Twitter in an EFL context in a Chinese university to train communicative and cultural competence. Questionnaires were also used in this study and results suggested that conversation-making via microblogging helped build classroom community. Microblogging was also thought to help students make gains in cultural competence through reading the tweets of expert speakers. However, in contrast to Antenos-Conforti's study, where negotiation of meaning was palpable, Borau et al. found that the character limit and dictionary usage limited the use of communication strategies, thus concluding Twitter does not help in building strategic competence. Moreover, Newgarden (2009) used Twitter in an ESL context and also reports on how conversation-making helped students build community as the students' tweets revealed instances of 'concern and support' for one another. Adopting a situated learning approach (Lave & Wenger, 1991), Newgarden also concludes that reading expert speakers' tweets helped students become legitimate peripheral participants in the community of practice in the target culture. Finally, Ulrich, Borau, and Stepanyan (2010) analyzed student interaction within a microblogging network designed for English language learning in a Chinese university. The authors found that students tended to interact with those of the same gender, to self-initiate replies to tweets, and to favor public communication.

The research into the applicability of microblogging in the language classroom is currently in its incipient phase. Antenos-Conforti's (2009) study touched on students' perceptions into using microblogging for negotiation of meaning and instructor feedback. This study augments Antenos-Conforti's by exploring students' noticing (Schmidt, 1993) of specific grammatical constructions through input, output and interaction processes while microblogging, and how these processes may affect explicit and implicit learning processes as well as proceduralization and memory consolidation.

Theoretical Background

During the 1990s, a move away from the zero interface position, and its null grammar approach associated with Krashen's Monitor Hypothesis (1981, 1982) was driven in part by Schmidt's Noticing Hypothesis (1990, 1993, 2001). According to Schmidt (1990, 1993), conscious awareness and noticing of specific language features in the input are a requirement for conversion of input to intake and emergence of language features in production. Schmidt (1993) suggests a learner's attention can be drawn to specific input by making the input more salient (Schmidt and Frota, 1986). Schmidt (1990, 1993) states that noticing is the second level of conscious awareness, above perception, and depends on a number of factors, including expectation, frequency, saliency, skill level and task demands. In attending to input, learners may *notice the gap* (Schmidt and Frota, 1986), between one's own formulation and the target-like formulation, causing a restructuring of the interlanguage system leading to conscious knowledge, characterized by problem solving capabilities and meta-cognitive awareness (Schmidt, 1990). Consciousness-raising tasks (Fotos, 1992; Sharwood Smith, 1981) and explicit instruction are two tasks which can increase noticing. Schmidt's hypothesis laid the foundation for the weak interface position, which led to further research and debates about explicit and implicit language learning in the field of second language acquisition.

Conscious attention and noticing in input are also considered necessary for implicit learning. Nick Ellis (2002a, 2002b) is a strong proponent of usage-based models that are characterized by the implicit tallying of frequent exemplars in input from which learners extract generalities and which are fine-tuned through repeated communicative use. Ellis concurs (2002b, p.298) that noticing and explicit instruction have a role in second language acquisition, but only for the initial registration of a target language feature. Noticing can be induced and acquisition accelerated through teacher interventions involving explicit instruction, focusing on structures which learners

would not be likely to acquire *sans* intervention, e.g., those that are communicatively redundant or that already have fine-tuned patterns from the L1 which differ from the L2 (Ellis, 2002a). The important point for Ellis, though, is that subsequent noticing is not necessary. Once a structure is noticed, it is fine-tuned and automatized through meaningful usage of the language with frequent opportunities to practice and implicitly register prototypical exemplars (Ellis, 2002a, p.175; 2002b, p.323). Thus, language learning is a piecemeal enterprise in which learners extract statistical probability data from the frequency of constructions in the input, shaping their hypotheses through continual usage and repeated exposure to exemplars in the input (Ellis, 2002a, p.144).

Noticing is also an important component of output. According to Merrill Swain's Output Hypothesis (1995), one benefit of output is the noticing/triggering function that helps students notice a gap (Schmidt and Frota, 1986), or hole (Doughty and Williams, 1998) in their language production. In other words, they may become conscious that they either are not producing language according to the target language (gap), or they simply do not know how to say or write what they want (hole). Noticing a gap or hole may trigger cognitive processes that help learners generate new knowledge or reinforce existing knowledge, both resulting in language learning (Swain and Lapkin, 1995).

Noticing can also occur through interaction processes, such as negotiating meaning or form. Michael Long's Interaction Hypothesis states that negotiation of meaning (clarification requests, comprehension and comprehension checks) that triggers noticing and input modifications have positive effects on the acquisition of lexis and morphosyntax by drawing a learner's attention to a gap or hole, which may result in 'pushed output,' in turn making input more comprehensible (Long, 1996, p.414) . Empirical studies throughout the 80s and 90s established the positive benefits of negotiation and input comprehensibility (Bitchener, 2004; Doughty & Pica, 1986; Gass & Varonis, 1994; Varonis & Gass, 1985; see R. Ellis, 1991 for a critique of the Interaction Hypothesis).

Corrective feedback can also draw attention to forms through interaction. Corrective feedback is varied. It can be either oral or written, implicit or explicit, input-prompting, or output-prompting (Ellis, 2007). Studies on corrective feedback in computer-mediated communication (CMC) environments have increased in the last 15 years concurrently with technology. Heift (2004) and

Sauro (2009) both studied the effects of corrective feedback type on learner uptake, finding that metalinguistic feedback seems to facilitate more learner uptake than other feedback types. Sotillo (2005) explored feedback given through NS-NNS and NNS-NNS dyads, demonstrating that the latter are more likely to provide explicit feedback than the former, and that data from chat logs can be incorporated into classroom lessons. Lai and Zhao (2006) examined noticing and text chat. The authors conclude that the noticing of one's errors in a chat environment is enhanced due to such factors as processing time and the ease of editability while chatting. Smith and Sauro (2009) investigated self-initiated repair and negotiation in chat environments and their possible relationship to scrolling. He found that learners seem to engage more in self-initiated grammar correction than lexical correction, with a negative correlation between scrolling and negotiation. Finally, Sauro and Smith (2010) examined lexical complexity and lexical diversity in chat environments, concluding that students do seem to use the extra time allotted from slower turn taking in chat environments to plan and implement more complex language.

In contrast to the weak interface position, the strong interface position posits that explicit rule-based knowledge can become implicit through repeated practice. This position leans heavily towards a cognitive skills acquisition perspective, stating that explicit knowledge can be converted into implicit knowledge through repeated practice. According to Andersen's Adaptive Thought Control Model (ACT) (1983), the learning of cognitive skills occurs in three stages: 1) declarative knowledge, 2) proceduralization, and 3) automatization. DeKeyser (1998) argues that when some forms are practiced repeatedly in a meaningful context, proceduralization and automatization can take place. Therefore, DeKeyser (1998) recommends pedagogical sequences for language learning that begin with explicit instruction followed by meaningful activities designed to promote proceduralization. These activities should not be rushed and should allow the learner ample time and opportunities to access their declarative knowledge, before proceeding to more free-based exercises and activities.

Research Questions:

- 1) How can microblogging as a structured, grammar task encourage noticing through input, output and interaction?
- 2) Will students perceive microblogging as beneficial for practice, proceduralization and memorization of new grammatical constructions? If so, how?

The Study

Participants

The students who participated in this study were part of a high advanced English as a second language grammar course in the Program for American Language Studies (PALS) at Rutgers University-Newark. High advanced is the sixth and culminating level in the PALS intensive English program, which lasts for one year and is divided into six levels, each of which runs over a seven-week session. Levels range from beginner to advanced. PALS students take grammar classes twice a week for one hour and twenty minutes each class. Each class meets a total of fourteen times throughout each session for a total of twenty-one contact hours.

Forty-nine students and the author participated in the study, which took place from September 2009 until December 2011. Students came from a variety of ethnic backgrounds, including Korean, Colombian, Saudi Arabian, Turkish, Peruvian, Ecuadorian, Chinese and Brazilian. Twenty-four students were male, while twenty-five were female. Most students were between the ages of twenty-five and thirty-four and had various reasons for attending the program, ranging from TOEFL preparation to studying abroad before returning to their home country. The large majority of students had never heard of or used Twitter previously.

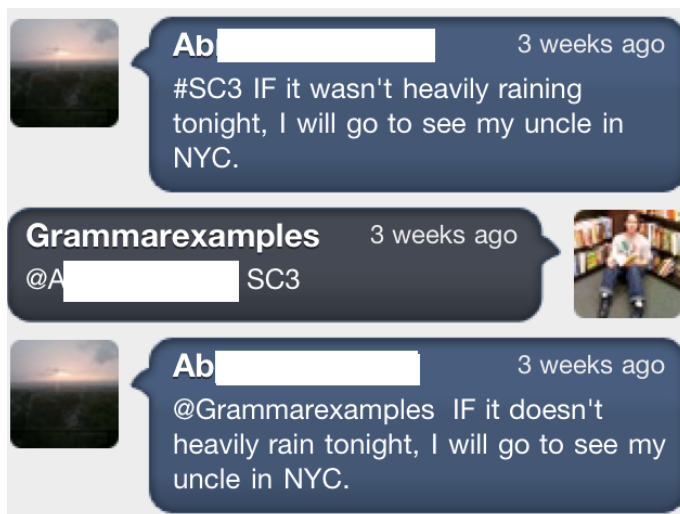
Methodology

PALS instructors are required to teach grammar from a synthetic syllabus with pre-selected grammar structures to be learned each seven-week session. The structures outlined for high advanced grammar include the following: the passive voice, subordinating conjunctions and conjunctive adverbs. The author taught both the high advanced reading and grammar classes during this study, with the same students usually taking both courses. Reading classes were on Monday and Wednesday and grammar classes were on Tuesday and Thursday. The thematic contexts from the reading class were carried over to the grammar class, ensuring they had already been processed for meaning. This allowed the author to extract grammatical exemplars from the readings, and use them for noticing activities, including consciousness-raising tasks.

In this study, Twitter was used as a structured grammar task for students to practice the grammar forms mentioned above. On the first day of each session, the author would introduce microblogging and Twitter through an oral and visual demonstration, explaining what it was and

how to use it, including how to write a tweet, how to follow someone, how to mention someone in a reply, and how to favorite and retweet.

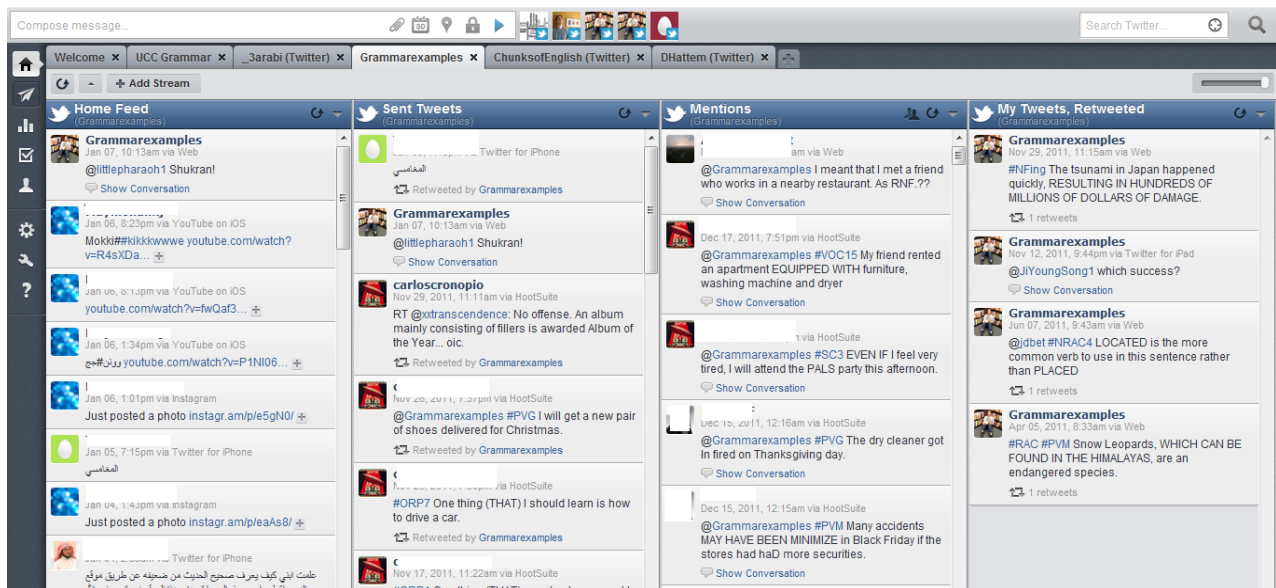
The author then explained to the students how these functions would be used for the exercise. If the student wrote a normative tweet, the author would both favorite and retweet it. By favoriting a tweet, the tweet was stored in the author's favorites, which could be viewed by the students, knowing they could trust that whatever they saw in the instructor's favorites were normative examples of this particular construction. By retweeting a tweet, the tweet became immediately available on the home page of all of the students. Thus, normative tweets were directed into two places, the author's favorites page, and the students' home pages. The purpose of favoriting and retweeting tweets was to let the student know their hypothesis was correct, as well as to increase noticing of normative target constructions for those who did not write the tweet. If the student wrote a tweet with a non-normative construction, the author would reply to the tweet, mentioning the student by their Twitter handle. This reply would appear on the student's home and profile pages, and was visible to other users as well. The reply tweet would have a dialogue box in it that any user could open to read the development of the conversation. In most cases, the author provided students with corrective feedback along the regulatory scale created by Aljaafreh and Lantolf (1994), including a prompt for a reformulation, which if unsuccessful would be followed by more explicit feedback, e.g., metacognitive information, and possibly additional target form examples if needed. At times, the author provided other kinds of feedback, including a small number of recasts.



During the seven-week session, students were required to write a minimum of fifty tweets using the grammatical constructions mentioned above and use their own lives and classroom contexts as content. They were further directed to quantify, codify and capitalize the target construction. The author created a list of metacognitive codes, such as: PV for passive voice and SC for subordinating conjunction, and furnished the students with a copy, believing that codifying and capitalizing the target structures would make the structures more salient, hence, more noticeable. The author had the students quantify their tweets so he could reference them on Twitter. Thus, a typical tweet looked like the following:

R
#CON1 If you appreciate your life, you should not drive when you are drunk.
16 Dec

In the last session of the study, the author began to use a new application with the students called Hootsuite. Hootsuite is a social media aggregator that allows a user to add various social media accounts, and then create side-by-side streams of different functions of the social media tool. The author chose to have the students sign up for an account with Hootsuite and add their Twitter account. Hootsuite was used for the following reasons. First, checking a user's mentions, sent tweets, retweets, and home page on Twitter requires a user to make multiple clicks and go to different pages. Also, on Twitter a user's tweets retweeted are mixed in with retweets from the user's followers. Thus, the feedback system devised by the author was not effectively facilitated through the Twitter client. However, with the side-by-side streams of Hootsuite, it was possible for the students to create one stream with all of the tweets made by the class (home page), one stream of their tweets (sent tweets), one stream for their non-normative tweets (mentions) and one stream for their normative tweets (my tweets, retweeted), and place each of these streams side-by-side.



Data Collection

Both quantitative and qualitative data were collected and triangulated. The Twitter application serves as a form of quantitative data and is operationalized for this study as the *Corpus of Tweets (CT)*. The CT provides the author with the total amount of tweets a user has made as well as name, date, and time stamps. Another source of quantitative data is JPEG files of corrective feedback exchanges. Hootsuite has the ability to thread and display conversations on Twitter, in the case of this study, corrective feedback exchanges. The author snapped screenshots of every tweet showing corrective feedback exchanges between the teacher and students for the last session of the study from October 2011 to December 2011. These JPEG files are used to enumerate how many exchanges and instances of uptake occurred.

In addition, two surveys were administered: 1) an *Input, Output and Interaction Survey (IOI)* n=39 (Appendix A); and 2) an *Automaticity Survey (AT)* n=9 (Appendix B). The IOI survey consists of two parts. Part one contains ten questions on a five-point Likert-scale, ranging from *never* to *always*, relating to students' noticing of language, their tendency to focus on form, and how they interacted with other students. The second part also uses a five-point Likert-scale, with answer choices ranging from 1) strongly disagree, to 5) strongly agree, with 3) neutral. The questions on the IOI survey relate to students' perceptions of the utility of Twitter for developing their grammar. The AT survey was administered to the last session of students, n=9. It uses a

five-point Likert-scale as well with answer choices ranging from 1) strongly disagree, to 5) strongly agree, with 3) neutral, and statements relating to Twitter's efficacy for proceduralizing and memorizing new language.

Qualitative data are also triangulated for this study. One form of qualitative data is a focus group (Appendix C) with eight participants, lasting approximately thirty minutes, recorded and summarized in a MS Word doc file. During the focus group, the author and students discussed students' goals and plans for writing on Twitter, how Twitter may aid students' memory of grammatical forms, as well as how microblogging compared to traditional grammar textbook exercises or sentence writing. Another source of data is thirteen face-to-face interviews (Appendix D), conducted by the author, all of which were recorded and summarized in a MS Word doc file. These interviews, conducted over two sessions, served as a follow-up to the IOI survey and sought to identify how students were using Twitter, e.g., what their process for writing tweets was, how they mediated their productive activity, and how they interacted with their classmates in the Twitter environment. In addition, some students were also asked if they could recall tweets they had written during the semester. An additional source of data is seven two-minute monologues comparing the advantages and disadvantages of using Twitter. Seven students recorded the monologues on the final day of one of the sessions. The monologues were later summarized in a MS Word doc file. The Twitter application serves as the final source of qualitative data. When necessary, the author applies discourse analysis to the tweets, including conversational analysis of students' online interactions, using Herring's (1999) framework for interactional coherence, which recognizes conversational coherency in CMC settings through back-channeling, lag time between turn-taking, and addressivity.

Results

Research Question 1: How can microblogging as a structured, grammar task encourage noticing through input, output and interaction?

Noticing in Input

As shown in Table 1, the IOI survey, n=39, reveals that students report noticing new grammar constructions as they were reading their classmates tweets. Forty-seven percent of students report noticing new constructions often or always, with 38% responding *sometimes*, and 12% responding *never* or *rarely*. Moreover, students report attending both to meaning and form with

a slight more tendency for a focus on form. In response to the statement: *I read my classmates' updates for MEANING*, 35% responded *often* or *always* with 46% responding *sometimes*. However, in response to the statement: *I read my classmates updates for FORM*, 62% responded *often* or *always*, with 20% responding *sometimes*. In the opinion monologues, multiple students noted that one of the advantages of Twitter is that it allows you to see your classmates' sentences. Data from interviews make it clear why: some students report that if they were unsure of how to use a particular grammar structure, they could get "good information" or "ideas about form" from reading their classmates' sentences. During the focus group, one student commented that reading her classmates' sentences 'empowered' her and made her feel more confident in her own use of the same structures. Another student commented that reading her classmates' sentences gave her examples and raised her confidence levels.

Table 1. Noticing in Input: IOI Survey, n=39

Statement	Never	Rarely	Sometimes	Often	Always
I noticed new vocabulary words or grammar structures in my <i>classmates' or teacher's</i> updates.	2.5%	10.25%	38.5%	30.75%	18%
I read my classmates' updates for MEANING	0%	18%	46%	25%	10%
I read my classmates' updates for FORM	0%	18%	20%	28%	33%

Noticing in Output

The data displayed in table 2 suggest that one factor affecting noticing in output was an audience effect. According to the IOI survey, 74% of students either agreed, or strongly agreed with the statement: *I paid careful attention to FORM when writing my sentences because I knew my classmates' would see them*, with 17% reporting *neutral* and 5% disagreeing. In response to the statement from the AT survey, n=9: *I used a lot of brain power to make sentences because I knew my classmates would see them. This effort helped me to remember the grammar*, 77% of students agreed or strongly agreed, and 22% chose neutral, with 5% disagreeing and 2.5% strongly disagreeing. During an interview, one student reported that awareness of an audience made him concentrate and focus while microblogging. In the focus group, the majority of students agreed that the audience positively affected their attention to form. However, in the

opinion recordings, although some students mention the positive effects, a few students noted negative affective issues from having an audience, e.g., writing inhibition due to anxiety about having their classmates read their sentences.

Table 2. Audience Effect

Survey	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
IOI n=39	I paid careful attention to FORM when writing my sentences because I knew my classmates' would see them.	2.5%	5%	17%	15%	59%
AT N=9	I used a lot of brain power to make sentences because I knew my classmates would see them. This effort helped me to remember the grammar	0%	0%	22%	33%	44%

As students noticed gaps or holes, they often turned to a variety of mediating tools. One of these tools was their classmates' tweets. According to the IOI survey, in response to the statement: *I got ideas for my sentences from reading my classmates' or teacher's updates*: 22% responded *always*, 16% responded *often*, 27% responded *sometimes*, 30% responded *rarely*, and five percent responded *never*. Data from interviews and the focus group reveal that some students wrote their sentences first on a piece of paper or in an MS Word document before tweeting, noting that it helped them "to think and concentrate". One student said that he first wrote in MS Word document so that he could use the grammar checker. Students also report using Google's search engine and translator, dictionaries, teacher-provided SCOBAs, such as grammar charts and graphs (Nereguela, 2003) as well their classmates' sentences to mediate their activity.

Noticing through Interaction

In the last session of this study, ten students used microblogging as part of the class, making a combined total of 925 tweets. Of these 925 sentences, 54 generated corrective feedback exchanges, or 5.85%. The author gave four types of feedback to the students: 1) Explicit, Input Prompting, 2) Explicit, Output Prompting, 3) Implicit, Input Prompting, and 4) Implicit, Prompting (Ellis, 2007). Of these, type 2: Explicit, Output Prompting, was the most utilized, resulting in

68.5% of all feedback types given. Of the 54 total corrective feedback exchanges, 86.5% resulted in successful uptake (Table 3), defined as a normative reformulation of the target structure or a repetition of the target form which was supplied by the teacher in a recast or explicit correction. More than 90% of all successful uptake occurred within one move of the author’s feedback. The time between the original tweet, the feedback, and uptake varied depending on the situation. When students wrote on Twitter during class time in the lab, in most cases immediate feedback and uptake was evident. When the student wrote the sentences at home, it would usually take at least one day for the author to see the tweet before responding to it, and uptake was dependent on how often the student checked their Twitter account, and whether or not they were inclined to make a correction.

Table 3. Corrective Feedback Exchanges during one 7 week session

Feedback Type (A Taxonomy of Corrective Feedback Strategies, Ellis: 2007)	Number of Times Given	Instances of successful uptake	Percentage of uptake
Explicit, Input Prompting (Explicit correction)	4	4	100%
Explicit, Output Prompting (Metalinguistic explanation, Elicitation, Paralinguistic signals)	37	34	92%
Implicit, Input Prompting (Recast)	6	5	83%
Implicit, Output Prompting (Repetition, Clarification Request)	7	5	71%
Total	54	48	86.5%

Data from interviews and focus groups demonstrate that students wanted to receive instructor feedback on their tweets and saw it as one of the main advantages and purposes to using Twitter. They also preferred feedback that was quick, abundant and explicit (output-prompting). Finally, data shows that students rarely initiated corrective feedback or negotiated meaning with each other even though they were noticing mistakes. According to the IOI survey (table 4), 78% of students report noticing mistakes in their classmates’ updates *sometimes* or *often*; however, only 14% of students acknowledge telling a classmate about a mistake *sometimes* or *often*, with 88% of students reporting either *never* or *rarely* telling a student about a mistake in their update. During interviews, when queried why they were not inclined to correct their classmates’ mistakes, the students often responded that they did not offer correction because they either did

not know the students and felt it would have been inappropriate, or they were not exactly sure if the tweet contained a mistake.

Table 4. Student-Initiated Corrective Feedback

Statement	Never	Rarely	Sometimes	Often	Always
I noticed mistakes in my classmates' updates	5%	10%	44%	40%	5%
I told a classmate about a mistake they made in their updates	53%	31%	7.5%	7.5%	0%
A classmate told me about a mistake I made in one of my updates	64%	17%	15%	0%	0%

Research Question 2: Will students perceive microblogging as beneficial for practice, proceduralization and memorization of new grammatical constructions? If so, how?

Practice, Automaticity & Memory

The strong majority of students were enthusiastic about using microblogging to improve their grammar. In response to the statement from the IOI survey: (table 5) *Twitter was a good place for me to test ideas I had about English grammar*: 79% agreed or strongly agreed, 13% chose *neutral* and 7% disagreed. From the same survey, in response to the statement: *My sentence writing has improved due to writing on Twitter*, 74% either agreed or strongly agreed, 18% chose *neutral*, while 8% disagreed. For one statement on the AT survey, n=9: *Microblogging was better than traditional textbook exercises, such as fill-in-the-blank or multiple choice*, 77% of the students either agreed or strongly agreed, with 22% responding *neutral*. Various student tweets also demonstrate their positive attitudes: one student tweets, "I am proud to be addicted to Twitter...because I associate it with our class and through twitter I am prepared for the next class.". According to another student, "I think that Twitter is a very important tool and it is helping me a lot to improve my grammar." Finally, in one telling tweet, the student uses a construction from the class: *only if*, while opining on the utility of microblogging: "Only if I practice what I learn here in twitter, will I be able to improve English skill." Data from the interviews suggest students were having fun while microblogging, commenting that microblogging was "something fun and casual," and "did not feel like homework." Another student mentioned how microblogging was just like text messaging, yet for the classroom it was new, different, convenient, and interesting.

Table 5. Microblogging and Practice

Survey	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
IOI N=39	Twitter was a good place for me to test ideas I had about the English language	0%	7%	13%	41%	38%
IOI n=39	My sentence writing has improved due to writing on Twitter	0%	8%	18%	54%	20%
AT N=9	Microblogging was better than traditional textbook exercises, such as fill-in-the-blank or multiple choice	0%	0%	22%	44%	33%

Students were also asked if microblogging helped proceduralize new grammatical constructions. According to the AT survey, (table 6) 100% of the students either agreed or strongly agreed with the statement: *Practicing on Twitter helps me to use the same grammar in my essays without having to think so much about it.* All of the students also either agreed or strongly agreed with the statement from the same survey: *Seeing my sentences retweeted gave me more confidence in using the grammar construction.* The strong majority also agreed with the following statements: *I can write quicker now due to practicing on Twitter* with 66% agreeing or strongly agreeing and 33% responding *neutral*. Finally, for the statement: *Seeing my classmates use the grammar like me, gave me more confidence in using the grammar,* 78% of the students either agreed or strongly agreed, with 22% responding *neutral*. According to data from the focus group, some students mentioned that microblogging helped them to “think” and “write” quicker.

Table 6. Microblogging and Proceduralization, AT survey, n=9

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Practicing on Twitter helps me to use the same grammar in my essays without having to think so much about it.	0%	0%	0%	88%	11%
Seeing my sentences retweeted gave me more confidence in using the grammar construction	0%	0%	0%	33%	66%
I can write quicker now due to practicing on Twitter	0%	0%	33%	33%	33%
Seeing my classmates use the grammar like me, gave me more confidence in using the grammar	0%	0%	22%	44%	33%

The majority of students also believed microblogging aided memory consolidation. In response to the statement from the IOI survey: (table 7) *Writing on Twitter helped me to remember new vocabulary words or new grammar*, the strong majority, 82% agreed or strongly agreed, 15% responded *neutral* and 2% disagreed. In response to a similar statement from the AT survey, n=9: *After using Twitter, I feel I WILL NOT forget the mistakes I made and how to correct them*: 44% students chose *neutral*, 44% of students agreed, 10% strongly agreed. In the same survey, in response to the statement, *Microblogging helps me to remember new grammar constructions*, again 44% were *neutral*, 22% agreed and 33% strongly agreed. The strong majority also agreed with the statement: *I used a lot of brain power to make sentences because I knew my classmates would see them. This effort helped me to remember the grammar*. In the focus group, one student mentioned that when the author was reviewing a grammar construction in class, the student could remember the tweet that they had written before containing the grammar construction. A few students also mentioned that writing tweets connecting new grammar to their lived experiences helped them to remember the grammar.

Table 7. Microblogging and Memory

Survey	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
IOI n=39	Writing on Twitter helped me to remember new vocabulary words or new grammar	0%	2.5%	15.5%	41%	41%
AT n=9	After using Twitter, I feel I WILL NOT forget the mistakes I made and how to correct them	0%	0%	44%	44%	11%
AT n=9	I used a lot of brain power to make sentences because I knew my classmates would see them. This effort helped me to remember the grammar.	0%	0%	22%	33%	44%
AT N=9	Microblogging helps me to remember new grammar constructions	0%	0%	44%	22%	33%

Data from interviews shed light on how microblogging may positively affect retention. One student comments that writing short sentences on Twitter, in contrast to using the grammar in essays, made the grammar easier to remember. Another student mentioned that she was only able to remember preposition combinations that she had practiced on Twitter and not the ones she had not. This prompted the author to conduct an informal experiment with eight students during the interviews, in which the author randomly selected tweets, some of which had been written up to a month previous, some of which had been written more recently. The author then read to the student a part of the tweet, omitting the part that had the grammar construction. The student was asked to remember the rest of the tweet. If the student either recalled the tweet verbatim, or the made an accurate slot substitution, the author considered it an accurate recall. In some cases, the author provided the student with the date as well as metacognitive information regarding the tweet, e.g., September 7th, passive causative. The author asked eight students to recall a total of 51 tweets. They were able to successfully recall 30 of them, or 59%. Two students were able to recall all of the tweets I asked them. One student, a female from Saudi Arabia, recalled seven of seven correctly, while another student, recalled six of six. Both students report having a strong visual memory, while one of them claims to have a photographic memory.

Discussion

Research Question 1: How can microblogging as a structured, grammar task encourage noticing through input, output and interaction?

According to Schmidt (1993, p.143), there are a number of factors that influence noticing in input, including expectations, frequency, perceptual salience, skill level, and task demands. The microblogging task contributed to noticeability in the following ways. First, the task structure restricted the usage of forms to complex grammatical constructions, thereby increasing the students' expectancy that target forms would appear in the input. Also, capitalizing the constructions enhanced the input, making it more perceptually salient, providing students with a focal point for attention (Schmidt, 1993). Moreover, the author's favoriting and retweeting of normative tweets made it clear which tweets were to be noticed, while also increasing the frequency students would see prototypical exemplars in the input, which may have triggered implicit learning processes responsible for acquisition (Ellis, 2002a, 2002b). This is evidenced by multiple students who said that one of the main benefits of microblogging was the opportunity to see their classmates' examples in case they were unsure how to use them after classroom instruction.

Microblogging also had an effect on noticing in output through an audience effect, mediational tools, and the nature of the Twitter client itself. First, having an audience played a significant role in increasing students' attention to form and monitoring. In traditional classroom sentence writing or grammar exercises, students have little audience for their production; however, in microblogging, the whole class is the audience for every one of the sentences a student writes, which has both positive and negative results. Positively, it raises students' attention to form, since they do not want to construct a non-normative sentence that their peers will view. Negatively, it may raise some students' affective filters to the point that any benefits from the activity become null.

Mediating tools also had an impact on noticing. As the students encountered "holes" while producing output (Swain, 1995), they turned to a variety of tools in order to ensure accuracy, including traditional tools, such as a chart, a pen, a piece of paper and a dictionary, or CMC tools, such as the Twitter status update box, which has a built-in spell checker, Google, online corpora or online translators. Mediating tools helped students to focus on the forms of their

tweets, and may have helped them fill holes in their linguistic knowledge. According to DeKeyser (1998, p.52) having declarative knowledge in working memory during practice is an essential part of skills acquisition.

Finally, microblogging affords the student much more processing time and rewritability than traditional CMC tools, which may positively affect the distribution of attentional resources to form. The first factor is the hybrid nature of microblogging, in which conversation is limited and largely asynchronous. Thus, students have no time constraints to construct a sentence or reply to a response. Also, not only can they edit their message before they send it, they can also delete and rewrite it. These two factors significantly increase the amount of attentional resources a student can allocate to the form of their message during output processes.

Microblogging also helped increase noticing in interaction through corrective feedback exchanges, but not negotiation of meaning. The instructor was able to assist the students in noticing the gap in their production through systematic corrective feedback exchanges involving elicitations for reformulations. A high percentage of feedback exchanges and uptake were observed. What may have contributed to the uneven balance between negotiation of form and meaning?

First, students generally want feedback and feel it is important for their progress. Writing on the cultural differences between Colombian and American students' and teachers' perceptions of the roles of corrective feedback in instruction, Schulz (2001) found that students highly valued instructor-provided negative corrective feedback as essential for the development of their grammar. Second, Swain (1995) argues that "pushed output," which challenges the learner to make an appropriate syntactic and communicative response, is highest when students are pushed by the teacher. In the current study, many students confirmed this by stating that one of the main purposes they had for microblogging was to receive feedback from the instructor.

Moreover, with synchronous computer-mediated communication tools (SCMC), such as instant messaging, conversation is characterized by a lag time between turn taking, and a lack of immediate back channeling, making it "difficult for message producers to tailor their messages to responds to their recipients' needs," (Herring, 1999). These characteristics of the chat tool may inhibit corrective feedback. For instance, in a study examining corrective feedback in a chat

environment, Sotillo (Sotillo, 2005) found that NNS-NNS dyads, engaged in corrective feedback 48% of the time the opportunity afforded itself, while NS-NNS dyads engaged less than that at 29% with successful uptake occurring at an average of 50% both dyad types.

However, microblogging is an asynchronous form of computer-mediated communication, which involves tweets. Tweets may or may not demand or even receive a response. Their communicative intentions have been fulfilled once they have been tweeted, i.e., a response is not anticipated. If they do anticipate a response, conversations usually occur over a brief period of time and limited number of turns (Honeycutt and Herring, 2009). Therefore, corrective feedback through microblogging does not impede the flow of communication like it may when conversing through SCMC tools, and may provide more opportunities for corrective feedback exchanges and uptake as was seen in this study. One additional benefit to corrective feedback exchanges in microblogging is that they leave permanent, public imprints which can be viewed by anyone; on the other hand, chat logs are private and can only be accessed by one user.

However, the same features which increase attention to monitoring and correction, may lead to a lack of negotiation of meaning. In more than 3500 tweets, negotiating meaning occurred infrequently, and in fact, negotiation only occurred as the students were using Twitter as an instant messaging tool. Also, the students who did engage in negotiation of meaning were part of well-connected social networks outside of the class. According to Stefanone and Gay (2008), existing social networks influence emergent communication patterns of CMC tools used in the classroom. Simply put, if students do not communicate much with each other outside of class, they are unlikely to communicate with each other in CMC forums. This was evident with the use of microblogging throughout the duration of this study.

Research Question 2: How do the students perceive microblogging as beneficial for practicing and developing automaticity and memorization of new grammatical constructions?

The strong majority of students believed that microblogging helped them to practice grammar and improve their grammatical confidence and sentence writing, noting the opportunities it afforded them to test hypotheses and to receive feedback from the instructor, which may have led to interlanguage restructuring (Swain, 1995). One of the reasons the students may have found microblogging beneficial was that it gave them an opportunity to practice grammar, but in

a way that was enjoyable, in a way that did not feel like practice or homework. Their feelings of enjoyment are consistent with previous findings of students' perceptions of microblogging (Antenos-Conforti, 2009; Perifanou, 2009) as well as other CMC environments as playful, lending themselves to jocularly due to such factors as lack of conversational restraints, text persistence and the resulting availability for conscious reflection (Herring, 1999).

Students also perceived microblogging as beneficial for proceduralizing new constructions, noting that it helped them to write sentences quicker as well as grow their confidence in using the selected grammatical constructions. Microblogging may also benefit memory consolidation. The majority of students felt microblogging helped them to memorize new constructions and lexis, and to remember mistakes they had made and how to correct them. Moreover, a few students demonstrated an ability to recall verbatim tweets which had been written weeks prior. These students attested to having a strong visual memory or being visual learners, and thus a connection between microblogging and visual memory may exist.

Limitations

The use of microblogging in this present study is not without its limitations. One limitation may be the task structure as designed by the author. First, restricting the forms and content students could use may have prevented hypothesis testing of other constructions not dictated by the synthetic syllabus. Second, the task was teacher-fronted. With the author acting as the sole authority of what constitutes a normative construction, as well as the only mitigator in prompting and eliciting feedback, students either lost or did not take the opportunity to provide peer-assisted meaning and form negotiation. Another limitation may be the audience effect. This study found that the audience effect played a role in directing students' attention to form. However, it may also have encouraged error and risk avoidance. Students may only have written sentences that they knew were correct in the fear of being ridiculed for non-normative sentences produced through risk-taking.

Conclusion

This study was conducted in order to determine how microblogging may increase noticing of specific grammatical features in input, interaction, and output, as well as determine its suitability for practicing, proceduralizing and memorizing new grammar constructions. It was found that

microblogging had a positive effect on increasing noticeability in input, output and interaction and was seen as a suitable forum for practice and memorization.

As an input process, microblogging, given certain task conditions as those described in this study, increases noticeability by presenting students with frequent, perceptually salient (Schmidt, 1993), prototypical exemplars that either reinforce students current knowledge or allow them to abstract statistical regularities (Ellis, 2002a, 2002b). As an output process, microblogging allows students to test hypotheses about target language forms, possibly resulting in noticing a hole in their production (Swain, 1995). Additionally, microblogging as output practice is considered an enjoyable task that builds syntactic confidence, while positioning the class as the audience for each student's output, which was found to significantly increase students' attention to form. The majority of students also believed there was a connection between their output and proceduralization, and memorization of new forms and interlanguage errors. As an interactive process, the students demonstrated high percentages of uptake following errors and prompts for reformulation in corrective feedback exchanges with the instructor. However, students rarely negotiated meaning or form with each other due to such inhibitory factors as lack of familiarity with the interlocutor or doubts about the normativity of a sentence.

What are the pedagogical implications for this study? First, microblogging is a viable alternative to traditional controlled exercises found in grammar textbooks, such as fill-in-the-blank, multiple choice, and sentence transformation. The microblogging task in this study is not a traditional mechanical, decontextualized drill in which students exhibit language-like behavior through meaningless repetition. Conversely, it is a meaningful, open-ended, structured task, which requires students to apply declarative knowledge to pre-selected forms to express their opinions, reactions, ideas, and beliefs about classroom content or personal experiences. A communicative activity of this sort is consistent with skills-acquisition theory and increases the likelihood of form-function meanings becoming proceduralized and entrenched in long-term memory (DeKeyser, 1998, p.53). Microblogging is the kind of task that separates meaningful grammatical skill-acquisition from the traditional, behaviorist Grammar Translation and Audiolingual Methods, which employed rote and meaningless substitution and repetition drills (DeKeyser, 1998, p.52).

Furthermore, microblogging can also be used as a complementary task to instant messaging tasks described in previous studies (Lai and Zhao, 2006; Smith and Sauro, 2009; Sauro, 2009; Sauro and Smith, 2010). Microblogging can be used to proceduralize new grammar constructions, to notice frequent prototypical exemplars of a target construction, and to provide a forum for testing hypotheses about target constructions. These can lead to proceduralization (DeKeyser, 1998) and restructuring of the interlanguage system (Swain and Lapkin, 1995). Instant messaging tasks, on the other hand, can be used to help build fluency and promote negotiation of meaning. Given these findings, future research into how microblogging can produce observable outcomes in lexico-grammatical development, as well as exploration into the relationship between task structure and language production in microblogging are warranted.

Biodata

David graduated from Rutgers-Newark in 2006 with a B.A. in History and Philosophy. In January of the same year, he began working as an ESL instructor in the Hispanic and Portuguese communities of Newark, becoming captivated by the culture exchange and the creative and productive use of language in the ESL setting. Since 2007, David has been teaching for the Program in American Language Studies, where he currently holds the dual position of Assistant Instructor (ESL), and CALL and Social Media Coordinator. In 2011, he attained his M.A in Applied Linguistics from the University of Massachusetts-Boston, concentrating on computer and mobile-assisted language learning, corpus linguistics and sociocultural theory. In addition to English, David also speaks Spanish, Portuguese and Arabic to varying degrees of proficiency, and has plans on studying French in the near future.

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Appendixes

Appendix A: Twitter Input, Output and Interaction Survey

I.

1. I read my classmates' or teacher's updates.
never rarely sometimes often always

2. I read my classmates' and teacher's updates for MEANING.
never rarely sometimes often always

3. I read my classmates' and teacher's updates for FORM.
never rarely sometimes often always

4. I noticed new vocabulary words or grammar structures in my *classmates' or teacher's* updates.
never rarely sometimes often always

5. I got ideas for sentences from reading my classmates' or teacher's updates.
never rarely sometimes often always

6. I noticed mistakes in my classmates' updates.
never rarely sometimes often always

7. I told a classmate about a mistake they made in one of *their* updates.
never rarely sometimes often always

8. I noticed mistakes in my own updates.
never rarely sometimes often always

9. I corrected mistakes I found in my own updates.
never rarely sometimes often always

10. A classmate told me about a mistake I made in one of *my* updates.
never rarely sometimes often always



II.

Write a number next to the statement indicating your level of agreement.

- | | |
|-------------------|---|
| strongly disagree | 1 |
| disagree | 2 |
| neutral | 3 |
| agree | 4 |
| strongly agree | 5 |
-

My sentence writing has improved due to writing on Twitter. _____

Twitter was a good place for me to test ideas I had about English grammar. _____

Writing on Twitter helped me to remember vocabulary words or new grammar. _____

I paid careful attention to FORM when writing my sentences because
I knew my classmates would see them. _____

Appendix B: Automaticity Survey

1. Seeing my sentences retweeted gave me more confidence in using the grammar construction.
strongly disagree disagree neutral agree strongly agree
2. After using Twitter I feel I WILL NOT forget the mistakes I made and how to correct them.
strongly disagree disagree neutral agree strongly agree
3. Practicing on Twitter helps me to use the same grammar in my essays without having to think so much about it.
strongly disagree disagree neutral agree strongly agree
4. Microblogging helps me to remember new grammar constructions.
strongly disagree disagree neutral agree strongly agree
5. I used a lot of brain power to make sentences because I knew my classmates would see them. This effort helped me to remember the grammar.
strongly disagree disagree neutral agree strongly agree
6. I can write quicker now due to practicing on Twitter.
strongly disagree disagree neutral agree strongly agree
7. Seeing my classmates use the grammar like me gave me more confidence in using the grammar.
strongly disagree disagree neutral agree strongly agree
8. Microblogging was better for practice than traditional textbook exercises, such as fill-in-the-blank or multiple choice.
strongly disagree disagree neutral agree strongly agree



Appendix C: Focus Group Questions

10/18/2011

7 participants

31:00

1. How does Twitter affect your ability to remember new grammatical constructions or vocabulary?
2. Can you recall any sentences which you wrote on Twitter?
3. What do you focus your attention on when you are writing on Twitter?
4. Why do you write on Twitter?
5. How do you write on Twitter?
6. How has using Twitter helped you to learn grammar if at all?
7. How is writing on Twitter different from writing on paper?
8. How is writing on Twitter different from traditional textbook exercises?
9. Did you read your classmates' sentences? What for?
10. How could we make using Twitter better? Do you have any suggestions for using Twitter?
11. What don't you like about using Twitter?
12. How does it feel to have your classmates as an audience for your sentences?
13. How do you construct your identity through your sentences?

Appendix D: Twitter Interview Questions

1. Had you heard of Twitter before you came to my class?
2. Did you ever notice a spelling mistake while you were writing on Twitter?
3. Did you correct it?
4. Did you ever notice a spelling mistake on a tweet you had already made?
5. Did you correct it?
6. Did you ever notice a grammar mistake while you were writing on Twitter?
7. Did you correct it?
8. Did you ever notice a grammar mistake in a tweet you had already made?
9. Did you correct it? When did you correct it?
10. Why were you checking for mistakes?
11. Did Twitter help you to be more concise?
12. Did Twitter help you to write sentences, how?
13. Why do you think you were using Twitter?
14. How do you think Twitter contributed to your grammatical development?
15. Do you think sitting with me and going over your tweets was helpful to you? How so?

Appendix E: Excerpt of Sample Corrective Feedback Exchanges with One Student

(Read in reverse chronological order)

abr@Grammarexamples I meant that I met a friend who works in a nearby restaurant. As RNF.??

Replied about 19 days ago from web



grammarexamples @Abr Did you meet the friend WHILE YOU were working in a restaurant, or you a met a friend of yours and they worked there?

Replied about 19 days ago from web

abr #RNF2 I met a friend of mine WORKING IN A NEARBY RESTAURANT.

Posted about 20 days ago from web



grammarexamples @Abra IN is not common with the RP WHEN. It's common with WHICH, when WHICH means WHERE. ex. This is the house in which I live.

Replied about 19 days ago from web

abrt #RAC3 I still remember the day in WHICH MY SISTER GOT MARRIED.

Posted about 20 days ago from web

abrt @Grammarexamples IF it doesn't heavily rain tonight, I will go to see my uncle in NYC.

Replied about 31 days ago from web



grammarexamples @Ab SC3

Replied about 31 days ago from web

abr #SC3 IF it wasn't heavily raining tonight, I will go to see my uncle in NYC.

Posted about 31 days ago from web

abt @Grammarexamples I arrived to the class late this morning because I got up from my bed late.

Replied about 31 days ago from web



grammarexamples @Ab SC1

Replied about 31 days ago from web

ab #SC1 I arrived to the class late this morning AS I got up from my bed late.