Technical Details

DO0043 Obj 5.4 ▪ CDRL A017 ▪ DID DI-MISC 80508B ▪ Contract No. H98230-07-D-0175

Stickiness and online learning
Pedagogical suggestions for engaging learners in LanguageNation
Martyn Clark, PhD, Ewa Golonka, PhD, Carrie Bonilla, PhD, Medha Tare, PhD

CONTENTS

Introduction ........................................................................................................................................ 2
Engaging students in online learning .................................................................................................2
   The nature of the problem .......................................................................................................... 2
   Elements of the solution ............................................................................................................. 3
Example applications to LanguageNation .........................................................................................6
   Task-based language learning ................................................................................................... 6
   Project-based language learning .............................................................................................. 13
   Form-focused language learning .............................................................................................. 17
Conclusion ....................................................................................................................................... 24
References ...................................................................................................................................... 25
Appendix A – Engagement Survey ..................................................................................................27
Appendix B – Job-related checklist ..................................................................................................29
Appendix C – Example beginning tasks ..........................................................................................30
Appendix D – Example Speaking task template ..............................................................................31
INTRODUCTION

Although online education has been hailed as a game-changer for bringing quality educational experiences to the masses, a recent news report noted that only 4% of those signing up for massively open online courses (MOOCs) actually completed the courses for which they had signed up. This is in spite of the increasing number of people online and in stark contrast to online games such as World of Warcraft, which still commands millions of users almost a decade after its original release. A research study at CASL revealed similar attrition for commercially available e-learning tools for language, such as Rosetta Stone and Aurolang Tell-Me-More (Nielson, 2011). In addition, a meta-analysis of studies of online learning by the U.S. Department of Education showed that online learners performed only modestly better than those receiving face-to-face instruction, and that much of the difference came from courses that included additional learning time or instructional elements not received in the face-to-face condition.

This report offers pedagogical recommendations for LanguageNation, expanding on those suggested in previous reports, and presents strategies to enhance student “stickiness,” – defined as keeping learners engaged and motivated to continue using the platform – that draw upon literature and concepts from second language acquisition, the gaming industry, and psychology. We start by describing the problem of promoting engagement in online learning, then identify eight elements of a potential solution before turning to specific discussions of three pedagogical approaches applied to three LanguageNation scenarios, illustrating how sound pedagogical recommendations can embody these elements of “stickiness.”

ENGAGING STUDENTS IN ONLINE LEARNING

The nature of the problem

Despite the promise of online and distance education, dropout rates for online education have been cited at 15 – 20% higher than traditional face-to-face courses (Angelino, Williams, & Natvig, 2007). This seems to be in direct contrast to the ever increasing amount of time that people spend online. Perhaps for this reason, there is growing interest in understanding the appeal of non-educational experiences, such as games, that appear to have little problem sustaining engagement from those very same people who are dropping out of online courses. This interest has even generated the new buzzword gamification, defined as “the use of game design elements in non-game contexts” (Deterding, Dixon, Khaled, & Nacke, 2011, p. 10), which has resulted in the addition of points, badges, and leaderboards to myriad online sites, educational or otherwise.

Of course, some educators have noted that traditional school already contains some game-like elements, such as points for completing assignments and “leveling up” to the next grade for successfully completing a year of study (Lee & Hammer, 2011), and that it is the more abstract qualities of games that contain lessons for education (Gee, 2007). In fact, even before personal computers became ubiquitous in education, researchers tried to develop motivational principles for instruction by looking at the characteristics of addictive games (Malone, 1981) to identify those deeper qualities. In other words, the issue of creating engaging online learning experiences is just the 21st century version of the perennial question of how to motivate learners to spend the time and energy needed to be successful in their studies. This is especially important if the training goal is professional levels of proficiency in a foreign language.

It may be useful here to make a distinction between learner engagement with a particular course or online application and motivation to learn a foreign language in general. It has been suggested that there may be two
general orientations towards language learning, integrative – the desire to communicate or otherwise engage with the language community – or instrumental – a desire to gain some advantage (e.g., better job prospects) conferred by learning the language (Gardner & Lambert, 1972). The concepts of intrinsic motivation (doing something because you enjoy it) and extrinsic motivation (doing something to achieve some external reward or escape punishment) make a similar distinction (Deci & Ryan, 1985). There is little doubt that the degree of integrative motivation at least partially explains second language achievement (Masgoret & Lambert, 2003), though “the question of how to motivate students is an area on which L2 motivation research has not placed sufficient emphasis in the past” (Dörnyei, 1994, p. 274).

**Elements of the solution**

Rather than engage in a lengthy presentation of specific research studies concerning motivation and related concepts, we have decided to take a more practical approach for this report. Drawing on game designer Yu-Kai Chou’s “Octalysis” model of core game drives, as well as previous research on engagement and motivation, we highlight the following eight elements, which are often cited as factors that may play a role in determining how engaging or “sticky” an activity or application will be. To the extent that these elements are or can be manifested in the learning activities in the LanguageNation platform, learner engagement should improve.

**Autonomy**

Autonomy refers to the feeling that you are in control, which has been suggested as one of three universal human needs, the others being competence and relatedness (Deci & Ryan, 2000). Perceived user control is a characteristic of engaging online activities (O’Brien & Toms, 2008). Even in remedial educational situations, which often default to a teacher-directed approach, autonomy can increase motivation (Dicintio & Gee, 1999). A qualitative study of experienced language learners (Rivers, 2001) noted that such learners regularly reflect on their learning, and can become frustrated with instructional activities that they feel are in conflict with their preferences. LanguageNation can foster autonomy by providing learners with choices about which activities to attempt and/or in which order to attempt them. The platform also allows for learners to provide feedback to the developers about the quality and effectiveness of activities, encouraging ownership and autonomy.

A closely-related notion is that of self-efficacy (competence), which is the feeling that you possess the requisite ability to do something (Schunk, 1991). This is important, as individuals “will approach, explore, and try to deal with situations within their self-perceived capabilities, but they will avoid transactions with stressful aspects of their environment they perceive as exceeding their abilities” (Bandura, 1977, p. 203). LanguageNation should help develop self-reliant learners by sequencing materials such that learners will be able to complete some part of it unaided based on their current proficiency, but will be exposed to materials that present a challenge, as discussed in the next section.

**Appropriate challenge**

If something is too easy, you will become bored; if it is too hard, you will become frustrated. For learning to occur, an activity needs to be “pleasantly frustrating” (Gee, 2004) – just within your current ability, but challenging enough to hold your interest. Research has found that students attribute low achievement to their own limited ability to perform difficult tasks (Graham, 2004). This simple relationship between the ability of a person and the difficulty of an activity is at the core of the concept of “flow” (Csikszentmihalyi, 1990), an ideal state in which “[c]lear and proximal goals, immediate feedback, and just-manageable levels of challenge orient the organism, in a unified and coordinated way, so that attention becomes completely absorbed in the stimulus field defined by the activity” (Nakamura & Csikszentmihalyi, 2002, p. 92). By definition, an individual in this

---

6 These broad categories gloss over many subtleties in more recent conceptualizations of the theories.
7 http://www.yukaichou.com/
state is optimally engaged, even to the point of losing track of time. Note that the flow state is not static – as a person’s ability increases, they will need more challenging activities to avoid boredom.

LanguageNation can ensure an appropriate level challenge through the adaptive nature of the platform to automatically adjust in real time based on a given learner’s pattern of correct and incorrect responses. Analyses of activities in the system across learners could also be exploited to help identify those types of activities that tend to be more or less challenging. Because different learners may have a different threshold for what constitutes “pleasant frustration,” the relative level of challenge may be greater for some learners than others, even if those learners are at the same level. It is also important to occasionally give learners a chance to have a sustained period of success, as experiences of mastery allow individuals to strengthen their sense of self-efficacy (Bandura, 1977).

**Variety**

Market researchers involved in consumer behavior have recognized that even satisfied customers sometimes try a different product just for variety (Faison, 1977). In games, elements of randomness or unexpected surprises are thought to be motivating (Malone, 1981), and events that have an element of novelty or complexity, while still being comprehensible, tend to generate interest (Silvia, 2008). Interest, in turn, is generally related to learning, attention, and motivation (Schraw & Lehman, 2001). Learning experiences that include a variety of activities will more likely be more engaging than those that do not.

In addition to providing different types of learning activities and materials, LanguageNation should also try to encourage different combinations of learner interactions, where possible. Random challenges that require the learners to apply their current knowledge to unexpected situations can also provide a potentially stimulating change of pace (in addition to mimicking the type of surge scenario that one might be asked to cope with in real life).

**Feedback on performance**

Learners crave feedback, and activities that contain clear criteria for performance and provide immediate and concrete feedback on how to improve performance are likely to be intrinsically rewarding (Czikszentmihalyi, 1982). Formative assessment, i.e., feedback on performance for the purpose of improvement rather than evaluation, has been shown to improve learning outcomes (Black & Wiliam, 1998). And, of course, corrective feedback, whether implicit or explicit, is vital to second language acquisition (Golonka, Osthus, & Tare, 2013).

In addition to feedback on the linguistic aspects of learner competence, the LanguageNation platform, through peers and coaches, should seek to provide additional feedback opportunities for more global aspects of language proficiency. These aspects would include such things as discourse style, pragmatics, and idiomatic uses of language.

**Measureable progress**

In video games, badges and levels are often used as markers of progress. Because language learning is a long-term process, motivation to continue is increased if learners have a sense that they are making progress towards their long-range goals (Tsang, 2012). There is some research to suggest that goal setting is correlated with proficiency outcomes (Moeller, Theiler, & Wu, 2011), and goal-setting is also an aspect of autonomy. In many cases, visible progress towards a personally meaningful goal is its own reward, whereas tangible rewards tend to undermine intrinsic motivation (Deci, Koestner & Ryan, 2001). If learners feel that they are not making progress, this can impact their sense of self-efficacy and, thus, decrease their motivation for continued study (Busse, & Walter, 2013).

For LanguageNation, giving the learners a chance to see progress towards long-term goals (e.g., to understand political speeches) should help increase motivation to continue using the platform. These goals can be captured in a needs analysis at the beginning of the course and/or presented to the learner as a kind of “Can Do” check list (e.g., “I can identify the topic of a political talk”). In addition, the unexpected challenges
mentioned earlier can help give learners a sense that they are indeed able to perform novel tasks with the language.

_Feeling of community_

Inclusion has been noted as a component for many models of motivation (Theall & Franklin, 1999), and the need to feel included or affiliated with others is considered a core human need (Deci & Ryan, 2000). In schools, sense of community is correlated with lower rates of absenteeism and dropout (Royal & Rossi, 1996), and fostering a sense of community has been identified as a characteristic of successful distance learning courses (Nieison, Gonzalez-Lloret, & Pinckney, 2009).

LanguageNation can foster a sense of community by providing opportunities for learners to collaborate with each other through projects, pair work, and other tasks which involve a common goal. Ideally this collaboration would occur synchronously, as that promotes real-time language use which is both challenging and engaging because learners work together to complete a task. A sense of community can also be achieved through asynchronous communication, including providing space for discussion, wikis, messages, and “likes” or comments. Friendly competition between groups of learners (e.g., trying to beat the previous cohort’s record for total words learned in a week) can also be considered.

_Meaningfulness/Relevance/Utility_

Learners will continue to do those things that they feel are providing value, thus learner satisfaction is an important predictor of completion in online courses (Levy, 2007). Learners who do not perceive value in an activity are likely to experience boredom (Pekrun, Daniels, Goetz, Stupinsky, & Perry, 2010), which will be detrimental for motivation. Particularly for those learners who are training for job purposes and have limited time to devote to it, utility will be a primary factor in their decision to continue to use a system.

LanguageNation can highlight relevance by following the practice of gathering information on learners’ needs for the language at the outset of training so that as learners accomplish sub-goals for those needs, they can be tracked and highlighted.

_Uusability_

Usability refers to the quality of the interface and the overall user experience of a platform. This is not an issue of motivation per se, but rather an ancillary concern. Users are willing to overlook minor usability concerns if they perceive a great deal of utility in the system. There is some evidence that the decision to continue using an online service is related to how well the actual experience meets initial expectations (Bhattacherjee, 2001), and that perceived ease-of-use is related to e-learning satisfaction (Sun, Tsai, Finger, Chen & Yeah, 2008). To that end, LanguageNation is undergoing several rounds of piloting with learners who are providing feedback about system bugs and revealing preferences about user experience. The system will continue to be improved through this and other types of user feedback processes.

More than any theory of engagement, the “stickiness” of LanguageNation will ultimately be determined by how aspects of the platform enhance or inhibit these eight elements of learner engagement and motivation. Currently, much research into online engagement is done through learner surveys, and to this end we have developed a set of survey questions (Appendix A) to gauge learner engagement with the LanguageNation platform as it develops. Procedures to detect motivation from the analysis of computer log files (e.g., Cocea & Wibelzahl, 2007; Baker, D’Mello, Rodrigo, & Graesser, 2010) are evolving and may eventually be able to provide real time feedback to the system to prompt appropriate interventions when undesirable behavior is first noticed.
EXAMPLE APPLICATIONS TO LANGUAGENATION

In this section, we discuss three approaches (task-based, project-based, form-focused) to developing learning sequences in the context of LanguageNation, relating these approaches to three of the different types of training scenarios (surge – rapidly building language capacity in response to an immediate need; maintenance – maintaining or enhancing previously acquired language ability; and cross-training – applying language learning experience to a new language) for which the LanguageNation platform may be deployed. This section focuses quite heavily on the pedagogical aspects of these recommendations. This is intentional, as it makes little sense to try to make less effective pedagogical approaches “sticky.” To paraphrase systems thinker Russel Ackoff, we want to avoid “doing the wrong thing righter.”

Although we have tried to make things as concrete as possible by referencing various scenarios, we do not mean to imply that these approaches should be used exclusively for these training scenarios, but rather to suggest that the LanguageNation platform will benefit from having a wide variety of training options available to better cater to the requirements of the training as well as the needs of the learners. We believe that whatever functionality the system has should be available to any learner for any training scenario, with the particular approach or principled combination of approaches used based on the learning problem at hand. After each of the sections, we consider how the elements of “stickiness” that were identified previously might apply to the activities suggested. Our hope is that LanguageNation will push the boundaries of online pedagogy by prioritizing educational value over technical expediency, while remaining scalable and flexible.

Task-based language learning

In the LanguageNation Objective 2 technical report (Green, Golonka, Adams, Bonilla, Clark, Tare, & Jones, 2014), we suggested that a task-based language teaching (TBLT) approach was particularly useful in a rapid-rise or surge scenario, capitalizing on mission-driven needs assessment that identifies target tasks which, in turn, inform the pedagogical tasks used in the training. In what follows, we present a more detailed description of how a particular target language task might be implemented in LanguageNation.

Long (1991) identifies several steps in implementing TBLT:

1. Needs analysis
2. Identification of target-task types
3. Materials development
4. Syllabus design
5. Methodology
6. Student assessment
7. Program evaluation

Unfortunately, most of these steps can be labor intensive, and draw upon a fairly wide array of domain experience and human capital. In order to be maximally scalable, one of the challenges of LanguageNation is to minimize the need for human involvement to the extent possible. Although it is most likely impossible to maintain the quality of training needed without some judicious use of human resources, explicating the steps in the process can suggest opportunities to identify those portions of the process that can be automated or condensed. Taking this into account, the TBLT process might be amended for LanguageNation as shown in Table 1.

Heeding the oft-cited programming dictum “Garbage in, garbage out,” it would be advisable to have some level of human oversight for any automated processes, especially initially in order to ensure quality control. For example, the system could be prepopulated with a set of task templates derived from a fairly extensive needs analysis and identification of target-task types for the most frequent and/or highest priority mission needs. This can include “lesson learned” needs from previous missions as well (especially in surge contexts), on the belief that similar needs may arise in the future. (Note that not all task templates in the system need to be included in the learning plan for every learner.) A set of rather broad needs can also be presented to the learners in the form of a checklist upon first use of the system (see Appendix B) to help capture patterns of need over time as more learners enter the system.
Table 1. Steps in TBLT

<table>
<thead>
<tr>
<th>Step</th>
<th>Ideal</th>
<th>Amended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needs Analysis</td>
<td>Comprehensive identification of target language tasks and collection of authentic samples of language used in those tasks.</td>
<td>General needs survey to capture broad needs; continually updated learner profiles. Ongoing HLT analysis of authentic language where feasible.</td>
</tr>
<tr>
<td>Identification of target-task types</td>
<td>Abstraction of tasks identified in needs analysis into more general task types.</td>
<td>Development of task templates based on very general understanding of needs, which can be further refined through feedback and/or a formal needs analysis</td>
</tr>
<tr>
<td>Materials development</td>
<td>Pedagogical tasks developed by instructors from target task types.</td>
<td>Tasks built on the fly based on the task templates and/or tentatively assembled into task packets for human review</td>
</tr>
<tr>
<td>Syllabus design</td>
<td>A graded sequence of tasks derived from an examination of the task complexity.</td>
<td>No explicit syllabus design, but rather criterion performance targets for task types and language level, with task complexity manipulated by the system to create a sequence of activities; recommended activities informed by experience of other learners in the system;</td>
</tr>
<tr>
<td>Methodology</td>
<td>Application of universal methodological principles, adjusted to suit local conditions.</td>
<td>Instruction consisting of whatever options are available in the system, continually adjusted based on learner performance and progress towards criterion goals; instruction individualized based on aptitude, etc.</td>
</tr>
<tr>
<td>Student assessment</td>
<td>Task-based, criterion-referenced performance tests.</td>
<td>Task-based, criterion-referenced performance tests derived from task templates and/or external measures.</td>
</tr>
<tr>
<td>Program evaluation</td>
<td>General program evaluation</td>
<td>General program evaluation</td>
</tr>
</tbody>
</table>

To illustrate the process of how a set of learning tasks might be generated by the system, we provide the following example. A typical language analyst task involves taking information from a variety of audio and print sources (e.g., news broadcasts, websites, interviews) and producing some sort of language product (e.g., a summary, a translation, a timeline) of the event(s) in question. These source texts may or may not have already been through some level of screening to determine their informational value. In addition, depending on the source, texts may be subject to some amount of multilingual features (e.g., code-switching or mixing) or degradation (e.g., background music in audio file). Thus, language analysts need to develop the ability to identify relevant information across a range of document types of potentially varying quality.

To automatically fetch texts, a series of articles related to a single event could be determined through an event centered clustering technique (e.g., Azzopardi & Staff, 2012) or similar approach. In cases where the information is available, selecting topics and/or regions particularly relevant to the learner’s future needs as identified by the initial needs survey would be recommended. To the extent feasible, information from the learner model would also be incorporated so that the fetched texts provide optimal input in terms of vocabulary and linguistic data for that particular learner. For this running example, Google news (an automatic news

---

8 We recognize that this task type may not be feasible for learners who do not have some rudimentary ability in the language (i.e., ILR Level 1). For a sketch of the types of tasks that may be possible with initial language learners, please see Appendix C.
aggregator) has been used to fetch a number of articles related to the series of bombings in Russia in the weeks before the 2014 winter Olympics. The following shows the first few lines from three of the fetched texts, two relevant texts (Text A9, Text B10) and one related, but irrelevant text (Text C11).

**Text A**

Russia Bombing Kills 15 Ahead of Olympics  
Dec. 29, 2013  
By BEN GITTLESON and TOMEK ROLSKI

A suicide bombing has killed at least 15 people and injured over 40 in the southern Russian city of Volgograd, raising concerns about terrorism just over a month before Russia hosts the 2014 Winter Olympic Games.

A female bomber carried out the blast in a Volgograd train station, 400 miles from the site of the upcoming Olympics in the Russian resort town of Sochi, Russian authorities said. The Sochi 2014 Olympic Games are scheduled to begin on Feb. 7.

**Text B**

Volgograd: At Least 14 Dead In Bus Bombing (5:47am UK, Tuesday 31 December 2013)

More than a dozen people are killed in an attack on a bus as Russia's counter-terrorism agency is ordered to step up security.

The number of people killed in an explosion on an electric bus in the Russian city of Volgograd has risen to 15, according to reports. Investigators have described the blast, during the morning rush-hour on a trolleybus, as "an act of terror".

Russian investigators said the bus explosion - the second deadly attack in the city in as many days - was caused by a male suicide bomber.

**Text C**

Olympic curling fans hear the F-bomb? Frustrated athlete talks trash during game

Examiner | Jodi Jill, Sochi Olympics Scene Examiner  
Published February 15, 2014 12:49AM EST

Olympic curling fans might need to cover their ears when watching the Sochi Olympics. Olympic curling is offering some up close and personal coverage so most of the athletes have microphones. Viewers who watch the live stream and even on television can hear almost all the action. According to NBC Olympics on Thursday, there was too much to hear as one Olympic curling skip let out her frustration.

---


© 2014 University of Maryland. All rights reserved.
Though there is no pre-determined syllabus in LanguageNation, once target tasks are identified, a learning sequence of increasingly complex pedagogical tasks can be constructed. The following worked example illustrates the types of variables and pedagogical sequences that could be developed based on a set of fetched passages such as these. (An example of a template for a speaking task is presented in Appendix D.)

General description of target task:
Review several pieces of information (audio cuts, newspaper articles, blog posts, etc.) to determine what event took place, to identify which pieces of information are relevant for understanding that event, and to create a language product of that event that includes all of the essential elements of information.

Given this general task description, several variables which can be manipulated to alter task complexity (see Robinson, 2007) can be identified:

- Number of pieces of information (+/- few elements)
- Type of information (e.g., edited news articles versus cryptic emails, audio only versus video)
- Inclusion of irrelevant information sources (+/- single task)
- Familiarity with event (+/- prior knowledge)
- Amount of time available (+/- time pressure)
- Type of language product (summary versus bullets versus detailed transcription versus translation)
- Degradation of materials (noisy audio, mutilated text)
- Passage characteristics/code complexity (relative to general ILR level and assumed learner ability, lexical density, speech rate, % unknown words, etc.)
- Availability of language support tools (e.g., +/− online dictionary, +/− Did-you-mean? (DYM))

Additionally, from this general target task description, several possible pedagogical tasks can also be identified. Pedagogical tasks break the target task down into simpler, more manageable elements to help scaffold the learner:

- Sort information sources into one of three (or more) piles based on topic
- Given topic, make “relevant/irrelevant” decision as quickly as possible for a set of materials
- Quality check another analyst’s “relevant/irrelevant” decisions
- Review a summary completed by other analyst
- Fill in a partially completed timeline
- Transcribe portions of an audio recording
- Translate a portion of a document/audio recording

The variables and pedagogical tasks illustrated above can be sequenced into a series of learning activities that provide different levels of scaffolding as learners work their way towards the target task. In other words, the pedagogical task “review a summary completed by another analyst” can be done for a summary of three, rather simple, clean source materials or for a summary of ten very dense and degraded source materials.

Although some of these pedagogical tasks are assumed to be relatively easier than others, the absolute difficulty of the tasks will depend, in great part, on the characteristics of the specific materials (and passage characteristics/code complexity). That is, all other things being equal, a task using ILR Level 3 texts will be harder than one using ILR Level 2 texts. (The examples above are extracts from texts that are roughly appropriate for ILR Level 2.) This makes the general template maximally flexible, as the same types of activities can be recycled with slightly more difficult materials, but easier tasks. This idea is illustrated conceptually in Figure 1, which represents how task complexity variables can be manipulated across multiple tasks to create increasingly challenging activities.
Figure 1. Increasing challenge over time by varying task complexity variables.

Note also that the same general task template and pedagogical tasks can be adjusted to fit different learning scenario objectives, in addition to surge. That is, for a surge scenario, emphasis might be placed on tasks that require making rapid relevant/irrelevant decisions on texts slightly higher than the presumed ability of the learner by allowing access to a variety of language support tools (e.g., online dictionaries, DYM), as this type of task most closely resembles the target job task. For a maintenance scenario, on the other hand, emphasis might be placed on producing summaries of materials closer to the learner’s assumed level, with the goal of covering a wide variety of texts and topics, as this might be more beneficial to performance on the Defense Language Proficiency Test.

Table 2 illustrates how the variables identified might be manipulated to create more and less complex versions of pedagogical activities related to the same basic target task (i.e., “synthesize information from a variety of sources”). Because the LanguageNation system has the capacity, in theory, to capture and track information relating to the passages, tasks, and learners, it should be possible to automatically adjust task complexity through the systematic manipulation of task characteristics.

<table>
<thead>
<tr>
<th></th>
<th>Simple</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Complex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support tools (e.g., dictionaries)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Prior knowledge</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Few elements</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Code complexity</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Includes irrelevant information</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Time pressure</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Degraded audio</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Complex language product</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

As illustrated by Table 2, a simple version of the task would be based on an event for which the learner is presumed to have prior knowledge, and would require the synthesis of a small number of source documents,
contain no irrelevant sources, have no time limit, contain only pristine audio files, require a relatively simple product such as a bulleted list, and allow access to various language support tools (e.g., dictionary). Increasing the complexity slightly would involve increasing the number of texts to deal with, and adding some irrelevant texts to the mix. A complex version of the task, on the other hand, would use material dealing with an unfamiliar event, have many degraded and/or irrelevant source documents, require an involved language product such as a summary report, and have a time limit. Although the extent to which these manipulations actually alter learner performance for any given set of materials is ultimately an empirical question, a feature matrix such as Table 2 can provide a tractable, initial method of defining tasks with varying complexity for the purpose of sequencing a series of learning tasks. As learner performance data is collected by the system, the actual effect of these manipulations can be empirically estimated and adjusted accordingly for subsequent learners.

The following pseudo-algorithm provides an example of how task development might be automated in LanguageNation.

Pseudo-algorithm
1. Set criteria (target ILR level, number of reading texts to fetch, number of audio texts to fetch, time limit for activity, degradation level of texts, lexical density or other measures of readability...) based on learner model, e.g.:
   a. If learner_ability == high:
      i. number_of_texts = 15
      ii. degradation_level = 15%
      iii. etc.
   b. If learner_ability == low:
      i. number_of_texts = 3
      ii. degradation_level = 0%
      iii. etc.
2. Fetch texts related to single event that satisfy criteria
   a. To facilitate learning sequences with multiple activities, fetching should return more texts than might be initially presented to the learner
   b. Gradually relax constraints if a sufficient number of suitable texts cannot be found
   c. Alternatively, prepopulate the system with a corpus of human curated texts, from which candidate texts are chosen
3. Fetch irrelevant texts (number_of_irrelevant_texts)
   a. Clearly irrelevant texts might be easier to distinguish than related but irrelevant texts
4. Degrade subset of texts if necessary (add noise, strikethrough words, alter speech rate, etc.)
5. For each text activity in the activity sequence:
   a. Set language product type (sorting, timeline, summary, etc.)
   b. Enable/disable access to language aids (dictionaries, etc.)
   c. Display texts to learner and start countdown timer (if needed)
   d. Adjust next activity in sequence based on learner performance
      i. Increase complexity of task, or
      ii. Increase level of language
6. At the end of an instructional sequence:
   a. Evaluate language product according to LPET (instructor or peer)

The notion of task complexity refers to the complexity of a single task. Task sequencing involves arranging a series of tasks – any of which can be engineered to be more or less complex – into a progression of tasks that are intentionally ordered to develop the learner’s ability eventually to perform aspects of the target real world task. For a set of fetched texts, a sequence of increasingly challenging pedagogical tasks may include the following:

- Activation of background knowledge, through various pre-task activities such as
  - Learner is shown images and/or English-language news report of the Russian bombing incident
Concordance/word map activity with relevant vocabulary (bombing, terrorist, suicide, etc.)

- Task 1 – Relevant / irrelevant sorting (few items)
  - Learner must sort target language reports into “relevant” or “irrelevant” piles (e.g., examples A and B are relevant, example C is not)
  - Feedback is immediately given once all items are sorted

- Task 2 – Relevant / irrelevant sorting (more items)
  - Same as above, but with addition of more articles/modalities
  - Feedback is given immediately once all items are sorted

- Task 3 – Fill in partially completed timeline of event:
  - 2013 bombing events:
    - May 20: Eight people are killed in a double car bombing outside a building used by court bailiffs in the Dagestani capital of Makhachkala.
    - October 21: A suicide bomber targets a bus packed with students in Volgograd, killing six.
    - December 29: A suspected female suicide bomber kills ____ people in a strike on Volgograd's ________, heightening security fears six weeks before Russia hosts the Winter Olympics Games.
    - December 30: A ______ suicide bomber kills at least ________ on a packed trolleybus in _______. Putin orders stepped-up security across the country.

- Task 4 – Check the summary of a peer analyst for completeness against a set of source texts
  - Ideally, this could be done for peers in the LanguageNation system

- Task 5 – Extract Essential Elements of Information from previously unseen passage about same target event

- Task 6 – Transcribe portion of an audio interview relating to the target event

- Task 7 – Produce summary of event based on combination of source texts and previously completed timeline

A criterion-referenced test for this task (done after several different events/topics have been encountered) could be to have the learner perform the target task with a set of materials drawn from a reporting on a novel, but similar, event.

It is important to emphasize strongly that, in TBLT, task sequencing and task complexity are viewed through the lens of the characteristics and requirements of the tasks themselves and not based a priori on any underlying grammatical learning targets. That said, to the extent that the LanguageNation learner model captures information about an individual’s developing language profile, such information can and should be used in the selection of potentially appropriate materials. In addition, throughout these activities, any automatic feedback or highlighting capability of the LanguageNation platform could be exploited.

**TBLT and “stickiness”**

There are several aspects of task-based language learning that can be presumed to promote “stickiness”

- Autonomy (the feeling that you have control) – Because tasks are derived from real world tasks that the learners will encounter post instruction, they will develop a sense of self-efficacy to the extent that they can complete the tasks successfully. In addition, for tasks that involve the use of supporting tools such as dictionaries, learners have the chance to determine which kinds of supplementary materials are of most use to them.

- Appropriate challenge (too hard = frustrating; too easy = boring) – Tasks can be varied along a wide range of variables, as seen in the example. This allows for appropriate adjustment of the challenge across a wide range of dimensions in addition to purely linguistic ones. To the extent that this information can be captured and used by the system, this allows for a great amount of fine tuning in terms of challenge.

- Variety (good for learning and preventing burnout) – To the extent that the system has a variety of task types, the learner will be exposed to a variety of activities. Additionally, within a single target
task type, the fetched texts can be on a variety of topics. The system can also present learners with unexpected “challenge tasks” that push their ability.

- Feedback on performance (immediate feedback to improve in the moment) – Feedback on performance can be provided automatically for tasks like the sorting activity. This will help learners feel that they are on the right track.

- Measureable progress (visible progress towards longer range goals) – To the extent that learners are aware of the ultimate target language task, they should be able to get a sense of their progress towards performing that task under increasingly target-like conditions. Because the focus is on task completion and not exclusively on language accuracy, learners can continue to make progress even if they hit temporary linguistic plateaus.

- Feeling of community (belonging to something greater than yourself; not isolated) – In synchronous situations, learners could collaborate in groups to do some tasks, especially any “challenge” tasks. In individual situations, storylines can be added that give the learner a specific purpose for dealing with a particular task or text, indirectly linking their success to a greater goal.

- Meaningfulness /Relevance/Utility – By definition, the task-based approach prioritizes those aspects of language that are thought to be most relevant to future needs. In addition, the LanguageNation platform itself offers the possibility of tailoring instruction at the individual level, based on a continually updated student model. This should help to ensure the relevance of the activities.

- Usability (quality user interface, user experience) – Many of the exterior trappings of “gamification” (e.g., points, badges, leader boards) could be easily integrated into a task-based approach. For example, learners could be given a certain number of points for each successful completion of a task. These points could be tied to descriptive levels of increasing facility with the task, with associated badges of honor (e.g., “informational super ninja”).

Project-based language learning

Another approach to driving a learner syllabus and pedagogical materials is through learner engagement in a course-length collaborative project. Although projects can be used with learners of any proficiency level, they are particularly well suited for learners who have developed a certain amount of facility with the language and are looking to maintain and expand their linguistic ability. This makes them a natural fit for a maintenance scenario in which learners need to find opportunities to use their language in meaningful contexts to ensure that they do not lose the language gains that they have made previously.

Project-based learning (PBL) is: “an instructional approach that contextualizes learning by presenting learners with problems to solve or products to develop” (Moss & Van Duzer, 1998). In that respect, it is similar to task-based learning in that there are concrete end-goals that are not based on acquisition of linguistic knowledge, and it is similar to content-based learning in that the content of the end-goals drives the course, not the language knowledge itself. Successful PBL in an English as a foreign language context has been found to incorporate the following four characteristics (Bülent & Stoller, 2005, p. 11):

- focuses on real-world subject matter that can sustain the interest of students
- requires student collaboration and, at the same time, some degree of student autonomy and independence
- can accommodate a purposeful and explicit focus on form and other aspects of language
- is process and product oriented, with an emphasis on integrated skills and end-of-project reflection.

Projects for language learning can range in size and scope depending on the interests of the learners and the context of the language program. Some approaches to project-based instruction intentionally try to involve the learners in real world projects with the target language community (e.g., interview refugees from a war, partner with a global environmental group) to encourage a global perspective on language (for additional examples see Cates & Jacobs, 2006). In another approach learning context, learners create their own simulation of a location
(i.e., an apartment) and interact as inhabitants of that location over a period of time, creating the various language artifacts (e.g., notes on the apartment bulletin board) that would be encountered in such a location (Dupuy, 2006). Of course, project based learning in LanguageNation will, by necessity, look very different from these examples given the particular language learning context in which the platform is to be used. Nevertheless, the constant among all of these disparate contexts is the focus on using language as a means to an end and not an end in and of itself.

The characteristics and tasks involved with PBL reflect many of the best practices for second language learning and teaching discussed in Green et al. (2014) and Miller et al. (2014). Engagement with comprehensible, rich input can be achieved through the phase of researching the topic and working with gathered materials. Opportunities for multimodal output and interactive tasks can occur through developing the product and sharing the results in collaboration with a team. Ensuring that learners notice and correct their errors can be incorporated through systematic platform feedback on learner production, as well as through learner/learner collaboration. Exposure to vocabulary used in the real world and on specialized topics can be achieved by the platform fetching contextualized language materials that relate to the project topics and relate to the targeted vocabulary frequency levels for the proficiency level of the learner. The project activities can be complemented by activities to facilitate long-term retention of information, such as by testing learners at regular intervals to recall words they have been using frequently in the materials they are gathering and analyzing.

Some examples of possible projects in the LanguageNation language learning scenarios follow:

- Development of “what to know before you go”-type manual for specific region/language/mission, etc. (e.g. surge scenario)
- Collaborative wiki of useful information (e.g. surge or maintenance scenario)
- Position paper on a current political topic in the region where the target language is spoken (e.g. maintenance scenario)
- Research paper on a city or region where the target language is spoken (e.g. maintenance scenario)
- Magazine-style book on a city or region where the target language is spoken (e.g. cross-training scenario)
- Digital story-telling (e.g. cross-training scenario)
- A multi-media presentation on an important figure from the country where the target language is spoken (e.g. maintenance or surge scenarios)

The basic steps that a learner would take in a project-based approach are shown in Table 3, along with examples of what possible tasks the learner and the LanguageNation system would need to perform for each step. Although much of the literature on project based language learning takes place within intact classes, this does not mean that projects need to have co-located learners or synchronous communication to be successful. In this regard, open source software projects may provide a reasonable model of how even teams with a distributed membership that changes over time can contribute to a common goal.
Table 3. Learner and platform tasks in a PBL sequence

<table>
<thead>
<tr>
<th>Steps (Moss &amp; Van Duzer, 1998)</th>
<th>Learner Tasks</th>
<th>System Tasks</th>
</tr>
</thead>
</table>
| Selecting a topic             | • Complete language learning needs and interests survey  
• Generate topics of interest  
• Choose from existing project topics generated from the platform that match their learner profile (e.g., needs and interests) | • Generate topics based on a general needs and interest survey  
• Maintain a database of past project topics and materials  
• Match users based on language learning needs, interests, and project topics |
| Making plans                  | • Interact with other learners in group  
• Synchronous: through text, voice, or video chat  
• Asynchronous: through private user-user messages, or in a group forum on a discussion board | • Provide initial template for goal setting and making plans  
• Provide forum for interaction with functionalities such as alerts when content is added and users are online, comment space on shared activities  
• Provide functionality to track learner-set goals in order to give feedback to the learner of their progress |
| Researching the topic & Developing the product | • Users find materials on the Web or from within the platform and post to a shared space.  
• Discuss and summarize content and assess relevance. | • System could make suggestions for related materials based on prior user data (e.g., other people like you liked this text…)  
• Provide feedback on learner error in production  
• Set specific goals for students to find different types of media  
• Test learners at regular intervals to recall new vocabulary encountered in the materials  
• Facilitate interaction among group members to contribute to language development (e.g. alert the user when other group members/users are looking at similar materials)  
• Draw in supplemental targeted activities for consistent learner error or learner-reported errors or language activities |
| Sharing results with others  | • Users could present synchronously using multimedia  
• Users could post the product in a shared space | • Other users could be invited to comment on and evaluate the products |
A sample sequence in an example Level 3 maintenance scenario:

1. **Week 1:**
   a. **Objectives:** Agree on a theme for the project, determine the final outcome, and structure the project.
   b. **Tasks**
      i. Learner fills out initial language learning needs/interest surveys.
      ii. Learner engages in available Level 3 maintenance style activities
      iii. Learner communicates with other group members via the platform
      iv. Group decides a topic:
         1. For example: Position paper on a current political topic in the region where the target language is spoken (e.g. maintenance scenario) in the form of a wiki

2. **Week 2**
   a. **Objectives:** Gather and analyze information
   b. **Tasks**
      i. Learner finds texts or reads texts suggested by system
      ii. Learner reads or listens to texts (written, audiovisual, aural) and uploads summaries/comments on shared space for other group members to see.
      iii. Learner could engage in other LanguageNation platform tasks as a complement to the project tasks.
      iv. System could analyze the written production for accuracy and provide the learner(s) written feedback

3. **Week 3**
   a. **Objectives:** Compile and organize information
   b. **Tasks**
      i. Learners use the materials gathered to start writing the wiki
      ii. Learners can add new content, or edit other learner’s contributions for content, style, or grammatical and lexical accuracy.

4. **Week 4**
   a. **Objectives:** Presentation and evaluation of the final project
   b. **Tasks:**
      i. The final product could be presented and evaluated by a group of more proficient learners, published on the Web for others to comment on, or shared with instructors.

*Project-based learning and “stickiness”*

The four pillars of project-based learning (real world focus, collaboration, accommodation to focus on form, and process and product orientation) reflect many of the elements of stickiness.

- **Autonomy (the feeling that you have control)** – Autonomy is naturally incorporated into the design of PBL. Learners can choose a topic and have a great deal of leeway in how they approach that topic. Creativity is encouraged. Also, because project work may involve additional skills beyond language ability, learners can take advantage of any unique abilities they possess in pursuit of project goals.

- **Appropriate challenge (too hard=frustrating; too easy=boring)** – Learners will typically be able to choose materials that are at an appropriate level of difficulty as they work on their projects. The system may also be able to play a role in this area by automatically fetching materials that are at the appropriate level given a particular topic.

- **Variety (good for learning and preventing burnout)** – Learners can potentially be involved in more than one project, which will provide variety. Collaborative project work itself will also provide a good complement to other more individualized LanguageNation learning tasks.
• Feedback on performance (immediate feedback to improve in the moment) – If project teams are comprised of learners at various levels and/or if instructors or language coaches are part of the teams, there will be ample opportunity for feedback on error in the course of pursuing project activities. In addition, learner collaboration via chat could be mined by the system to provide post hoc feedback on error based on the chat transcripts.

• Measurable progress (visible progress towards long range goals) – The orientation of PBL towards a specific product and developing work-related skills could help the learner visualize their progress. This could also be enhanced by providing assessment tools to help learners reflect how much progress they are making towards end goals, as well as identify areas where they need to improve.

• Feeling of community – Learners can work in groups to identify project goals, gather related materials, and perform project-related work. The process of simulating a group environment for learners to collaborate may be a challenge for LanguageNation until larger groups of learners begin to use the platform. Because groups can evolve their own unique dynamics, the more project choices there are for individual learners, the more likely they are to find a community that matches their interests and personality.

• Meaningfulness/Relevance/Utility – To the extent that learners are working on project areas that have relevance to their current lives of future needs, they should find the projects meaningful. Additionally, working as one part of team can also provide learners with a sense that their contribution is meaningful beyond themselves. Because students have varying beliefs about what language learning should look like, they may need explicit guidance on the purpose of project work to avoid dissatisfaction (Becket & Slater, 2005; Brandl, 2002).

• Usability – Because there are many moving parts in project work, templates, wikis, and other project-related resources could be built into the platform to give learners support as they work on their projects.

Form-focused language learning

Regardless of what teaching approach is used, e.g., whether task-based, project-based, communicative, or other, the background knowledge that the students are bringing to the learning environment cannot be disregarded. Moreover, it should be maximized to take full advantage of it. This knowledge includes that of previously learned languages, metalinguistic awareness about the languages studied and languages in general, and experience of learning these languages, which can manifest itself in language learning skills. Leveraging this language learning knowledge is especially vital in a cross-training scenario, where learners are intentionally selected to benefit from their L2. Thus, it is obvious that cross-training instruction should build on students’ previously acquired knowledge and experience. One way to do this is by directing learners’ attention to linguistic form in the third language (L3) so that they can notice linguistic features and make connections to corresponding L2 features, and consequently, benefit from their prior L2 knowledge while learning the L3. For that reason, we propose to incorporate elements of form-focused instruction, a pedagogical effort used to draw learners’ attention to language form either explicitly or implicitly, in cross-training instruction.

The effect of such instruction may lead to a faster pace of learning in L3, which is especially true in situations when L2 and L3 are closely related (Corin, 1994; Rivers, 1996). The idea of being able to learn a foreign language faster can be an attractive one for learners who have already invested a significant amount of time and resources into learning their L2. Being able to perform tasks in L3 from the very beginning and to achieve measurable progress relatively fast may motivate students to log in to the platform more often and stick with them for a longer time because they can see immediate gains that can bring them closer to reaching their goals.

12 Here, we use L3 to refer to any foreign language studied after L2; therefore, it can refer to the learner’s L3, L4, L5, and so on.

© 2014 University of Maryland. All rights reserved.
Cross-training instruction

In our literature review on psycholinguistic and cognitive factors impacting cross-training (Linck et al., 2013), we argued that previous L2-learning experience may facilitate or interfere with the learning of subsequent languages. Facilitation (i.e., positive transfer) is desirable and can lead to a faster pace of learning. Interference (i.e., negative transfer) on the other hand, can lead to false overgeneralizations and consequently to errors caused by false assumptions and can slow down the process of learning. Thus, identifying and attending to factors that promote positive transfer and reduce negative transfer can lead to a more efficient cross-training.

Unfortunately, there is very little literature available on the systematic investigation of cross-training instruction. Though we know from the growing body of literature on multilingualism that leveraging students’ previous knowledge in a cross-training course is the right thing to do, exactly how this can be done has not yet been investigated or documented. In the aforementioned literature review (Linck et al., 2013) we proposed how some implications for adult L3 instruction can be derived from available empirical evidence related to different language and learner factors affecting L3 instruction. In particular, we identified objective similarities and differences between languages that refer to the actual degree of congruence between the languages on measurable features. These objective features can be identified using methods from descriptive and comparative linguistics and tools such as World Atlas of Linguistic Structures (WALS; Dryer & Haspelmath, 2011), which encompasses a large database of phonological, grammatical, and lexical properties of hundreds of languages, allowing the user to compare selected properties for specific language combinations. The outcomes of these comparisons can potentially be used by LanguageNation to make learners aware of objective features of languages. This is important because positive transfer can occur only when learners are aware of the similarities between languages, that is, they need to be able to perceive characteristics of languages as similar for positive transfer to occur.

Based on these characteristics, we proposed the following recommendations that can guide the development of more specific instructional techniques for L3 instruction (Linck et al., 2013):

To improve student selection for cross-training courses:
- Identify optimal language pairings for cross-training. Tools such as WALS or the Gateway Languages database being developed at CASL can be used for this purpose. Preferably, languages that share most features should be selected.
- Select students with highest proficiency in the identified languages.

To facilitate positive transfer:
- Establish links between objective and perceived features of languages by capitalizing on similarities among L1, L2, and L3. Specifically, objective similarities should be described, for example, in reference materials, to which learners can be referred. Objective similarities can also be pointed out in texts (e.g., by highlighting). To ensure that the objective similarities become perceived ones, provide large amount of relevant input. No explicit teaching of these features is needed, hence, the time saving.
- Take advantage of the facilitative effects of cognates. Present cognates early on in instruction.

To reduce possibilities of negative transfer:
- Identify differences between L2 and L3 (e.g., false cognates, features that are realized differently in L2 and L3, features that do not exist in L3 but exist in L2 and vice versa)
- Encourage learners to evaluate their assumed similarities and formulate perceived similarities, as appropriate. Provide negative feedback if assumed similarities are false, that is, correct student errors that are based on assumed similarities. Change objective differences into perceived differences. This can be done by exposing learners to a large amount of relevant input in which they will encounter corresponding features of the languages.
Focus on form

Earlier in this report we recommended two instructional approaches for the surge and maintenance scenarios – task-based learning, whose main focus is on concrete real-world tasks identified through needs analysis, and project-based learning, whose focus is on contextualizing learning and collaborating while solving problems or developing products. One thing that both of these approaches have in common is that their end-goals are not overtly driven by the acquisition of linguistic knowledge. In contrast, in the cross-training scenario, where learners’ previous knowledge is the key to success, it makes sense to attend to linguistic forms in the target language and make connections to relevant forms in previously learned languages in order for transfer to occur. That being said, we do not recommend teaching cross-training through outmoded approaches such as grammar translation, but rather, drawing learners’ attention to linguistic elements in psycholinguistically opportune ways, either explicitly or implicitly.

The focus on form approach originally proposed by Long (1991) allows for including grammar in language instruction, but in a very specific way. It allows for drawing “students’ attention to linguistic elements as they arise incidentally in lessons whose overriding focus is on meaning or communication” (Long, 1991, pp. 45-46). This shift in attention to linguistic code features can be occasional and can be “triggered by perceived problems with comprehension or production” (Long & Robinson, 1998, p. 23). This is sometimes called a reactive focus on form, as opposed to the proactive one, in which the possible problems can be predicted and addressed before they occur (Doughty & Williams, 1998). The proactive focus on form is especially relevant to cross-training because objective differences between L2 and L3 can be described and pointed out to the learners in advance.

The essential idea of focus on form and its intended outcome is the notion that noticing linguistic forms is necessary for acquisition (Schmidt, 1993; Long & Robinson, 1998). According to Schmidt’s Noticing Hypothesis, if the learner does not notice aspects of the target language input, some kind of pedagogical intervention is needed to make those aspects salient, such as visual input enhancement (e.g., highlighting verb endings) or implicit negative feedback on error in a form of recasts (Doughty, 2004). In addition to noticing the forms of the target language, learners also need to notice the gap (that the target language form differs from the learner’s interlanguage13) and notice the hole (that the learner cannot say what he/she wants to say in the target language) (Doughty & Williams, 1998).

Because it is counterproductive to try to focus the learners’ attention on too many things at once, a series of decisions need to be made with regard to pedagogical focus on form. These include whether or not to focus on form, whether to be reactive or proactive, which forms to focus on, how to sequence the instruction, and the like (Doughty & Williams, 1998). The answer to these decisions will depend on the purpose of the activity and the forms in question. Several proactive focus on form activities lend themselves naturally to L3 reading tasks.

- **Pre-reading**
  - **Proactive focus on form**
    - Point out features from the text that are similar in L2 and L3
    - Describe features from the text that are different in L2 and L3
  
- **Reading**
  - Input flood (input seeded with many examples of the form in question)
  - Input enhancement (forms are typologically highlighted)
  - Noticing
    - Notice forms of the target language
    - Notice the gap
    - Notice the hole

- **Post-reading**

13 We define interlanguage as a systematic continuum between the learner’s L1 and L2 that contains structures from both the learner’s L1 and L2 (Selinker, 1972).
Building on the facilitative role of cross-linguistic influence between languages that are closely related but not mutually comprehensible (e.g., Spanish and Portuguese or Russian and Ukrainian), researchers working on the EuroCom project developed a teaching approach designed to achieve receptive competence in languages within three European language groups: Romance, Slavic, and Germanic. The idea of the project is to show the learner who knows one language from any of the three groups that he or she already has a lot of relevant knowledge to understand texts in other languages from that group. Though the project is focused on European language groups, some of their recommendations might be a useful first step in other contexts.

For instance, the EuroComRom project recommends transfer-based deduction strategies called “The Seven Sieves” that can help the learner to extract a lot of information from a text in a language that he or she does not know (McCann, Klein, & Stegmann, 2003). The learner is first encouraged to identify elements of the text to be deduced and filter the elements that can be used to understand the meaning from those that seem to be unimportant for working out meaning. Then, the learner can use the seven sieves, which include (1) international vocabulary, (2) pan-Romance vocabulary, (3) sound correspondences, (4) spelling and pronunciation, (5) syntactic structures, (6) morphosyntactic transfer, and (7) prefix and suffix transfer. The learner can infer the meaning at any time during that process and if the deduction is not successful after applying the 1st and 2nd vocabulary sieves, the learner can refer to the phonetic correspondence (3rd sieve) or spelling and pronunciation (4th sieve), as well as use other contextual clues (5th-7th sieves). If the deduction from context fails, the learner is advised to look the word up in a dictionary.

Sample activity

Since there is no optimal approach or method described in the literature for teaching a foreign language in a cross-training setting, in the following example we combined elements from three areas briefly described above that seem to be relevant for learning a language that is closely related to an already known language. In particular, we incorporated (a) findings from literature on the effects of multilingualism on language processing and language learning, (b) principles of the focus on form approach described in the SLA literature, and (c) recommendations from the EuroCom approach that incorporates instructional techniques developed by applied linguists designed to achieve receptive competence in all Romance languages.

We applied insights from these three areas in a reading comprehension activity where learners’ L2 and L3 are closely related. We do not recommend covering all of the steps with all of the texts and all of the learners. Some learners will need more scaffolding and will benefit from all or most of the strategies suggested below. Other learners may prefer to combine or skip some of the steps. For example, first and second reading can be combined, skimming or inferring meaning can be skipped, post-reading can involve one or more elements. These decisions can be made based on students’ needs (e.g., the amount of scaffolding needed), topic familiarity, text complexity, learner’s L2 and L3 proficiency, or the amount of time available for a given activity.

The basic steps involved in reading a text in L3 that is closely related to the learners’ L2, can include:

- Text selection: Providing rich, variable, and ample input
- Pre-reading: Using extra-textual information
- Skimming: Using general textual information

---

14 Dictogloss is an instructional technique in which learners collaborate to recreate a text that was read or played to them. Dictogloss activities contain grammatical features to be studied and encourage learners to focus on form (Doughty & Williams, 1998).
15 http://www.ghklein.de/eurocom/lit/ECengl-Innsbruck.htm
© 2014 University of Maryland. All rights reserved.
• First reading: Focusing on known material and similarities between languages
• Second reading: Identifying gaps
  o Identifying elements for deduction
  o Identifying relevant elements for working out meaning
  o Spontaneous deduction
    ▪ International vocabulary (1st sieve)
    ▪ Pan-Romance, pan-Slavic vocabulary (2nd sieve)
    ▪ Sound correspondence formulae (3rd sieve)
    ▪ Using spelling and pronunciation (4th sieve)
  o Considered deduction
    ▪ Syntactic transfer (5th sieve)
    ▪ Morphosyntactic transfer (6th sieve)
    ▪ Pre-/Suffix transfer (7th sieve)
  o Dictionary look-up if deduction failed
• Post-reading: Promoting noticing through output
  o Comprehension checks
  o Target language production (e.g., chat)

Table 4 shows the steps that the learner would take in a reading comprehension activity along with examples of learner and platform tasks relevant to these steps, as well as the kind of knowledge that the learner would bring to the cross-training setting because of his or her knowledge of L2 and experience with learning a foreign language. Automated feedback could be provided for activities based on some of these steps.

Table 4. Learner and platform tasks and relevant knowledge in cross-training reading comprehension

<table>
<thead>
<tr>
<th>Steps</th>
<th>Learner tasks</th>
<th>System tasks</th>
<th>What learners bring to the cross-training environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text selection: Providing</td>
<td>Select a text from a bank of texts or from a list of genres, topics, etc.</td>
<td>Provide texts in various genres. Start with texts types that learners are</td>
<td>Needs, goals, interests</td>
</tr>
<tr>
<td>rich, variable, and ample</td>
<td></td>
<td>familiar with from L1 or L2, e.g., newspaper articles about current</td>
<td></td>
</tr>
<tr>
<td>input</td>
<td></td>
<td>international events. Provide texts at the appropriate level.</td>
<td></td>
</tr>
<tr>
<td>Pre-reading: Using extra-</td>
<td>Formulate assumptions about the text based on knowledge of the particular</td>
<td>Label and organize texts by genre (e.g., poems, phone-call</td>
<td>External clues, to include general knowledge about</td>
</tr>
<tr>
<td>textual information</td>
<td>genre.</td>
<td>conversations, recipes, film reviews). Accompany texts with visuals</td>
<td>features of texts in different genres. For example,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(pictures, graphs). Automatic feedback could be given for successful</td>
<td>a set of instructions will most likely include</td>
</tr>
<tr>
<td></td>
<td></td>
<td>identification of specific elements (e.g.,</td>
<td>imperatives and steps that need to be followed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“highlight the direct quotes in the article”).</td>
<td>in order. Quotation marks show that text is a</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>verbatim quotation. Divisions, like paragraphs, serve</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>an</td>
</tr>
<tr>
<td>Skimming: Using general-textual information</td>
<td>Formulate assumptions about the text based on textual information gathered through skimming (use title, headline, word cloud)</td>
<td>Select texts containing titles, headlines, abstracts, divisions into paragraphs. Generate a word cloud. For practice, multiple word clouds could also be matched to multiple texts, with automatic feedback provided.</td>
<td>Previous background knowledge relevant to the text</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>-------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>First reading: Focus on known material and similarities between languages</td>
<td>Read the text focusing on already known vocabulary (because of knowledge of L3, L2, or L1). Work out the general theme and the main idea of the text. Notice forms of the target language.</td>
<td>Select texts containing multiple cognates. Provide reference materials, including lists of similar features, cognates.</td>
<td>Knowledge of L2 and L1, and in particular, similarities between languages; metalinguistic knowledge</td>
</tr>
<tr>
<td>Second reading: Identifying gaps</td>
<td>Read the text for comprehension and identify gaps (unknown words) that can be deduced or looked up. Identify relevant elements for working out meaning. Notice that the L3 form differs from the L2 form.</td>
<td>Highlight target forms in the text. Provide reference materials, including lists of features that are realized differently in L2 and L3, false cognates, features that do not exist in L3 but exist in L2 and vice versa. Provide glosses (with a possibility to turn the feature off).</td>
<td>Knowledge of L2 and L1, in particular, differences between languages; metalinguistic knowledge</td>
</tr>
<tr>
<td>Spontaneous deduction</td>
<td>Infer meaning of unknown words based on clues: international vocabulary, sub-family vocabulary, sound correspondence, spelling and pronunciation.</td>
<td>Provide pronunciation of target words, preferably by multiple native speakers.</td>
<td>Knowledge of relevant vocabulary in L2, knowledge of cognates</td>
</tr>
<tr>
<td>Considered deduction</td>
<td>Infer meaning of unknown words based on contextual clues: syntax, morphosyntax, prefixes, suffixes</td>
<td>Provide automatic feedback in response to learners’ highlighting of guessing about specific new words.</td>
<td>Knowledge of syntax, morphosyntax, prefixes, suffixes in L2</td>
</tr>
<tr>
<td>Dictionary look-up</td>
<td>Look-up words whose meaning could not be inferred</td>
<td>Make electronic dictionaries available (both bilingual and monolingual). Make glosses triggered by mouse-over available.</td>
<td>Knowledge of alphabet, different kinds of dictionaries, how to select the right sense from many available ones</td>
</tr>
<tr>
<td>Post-reading: Answer comprehension</td>
<td>Provide comprehension</td>
<td>Knowledge of the text</td>
<td></td>
</tr>
</tbody>
</table>
Although we have presented form-focused instruction in the context of cross-training from one language to another, the notion of drawing learners’ attention to specific linguistic forms can readily be used in other scenarios as well. Even in meaning-oriented activities such as those found in task-based and project-based instruction, learners need to notice relevant features of the input if language acquisition is to take place. And, unlike a live instructor who may only have knowledge of several languages at best, which may or may not include the languages previously studied by the learners, there is no limit in principle to the ability of the LanguageNation platform to tailor material for specific learners based on their language profiles.

Form-focused instruction in cross-training and stickiness

Aspects of form-focused instruction applied to cross-training that promote “stickiness”

- Autonomy (the feeling that you have control) – As experienced language learners, L3 learners develop a sense of autonomy and usually feel that they are in control of their learning. Because of their extensive experience, they feel they are equipped to make decisions about their learning. Giving them opportunities to make such decisions will motivate them to continue using the platform.
- Appropriate challenge (too hard = frustrating; too easy = boring) – L3 texts can be selected based on the degree of similarity between L2 and L3; for example, the amount of cognates included in the text to appropriately adjust the challenge. Authentic texts can be elaborated using cognates.
- Variety (good for learning and preventing burnout) – The target input can be varied by linguistic context (spoken or written mode, single or multi-media; genre, topic, number of speakers, code switch, complete/incomplete texts, authentic/elaborated texts) and extra-linguistic contexts (time of day, location, emotional state).
- Feedback on performance (immediate feedback to improve in the moment) – Feedback on performance can be provided automatically for tasks such as deriving meaning from context, responding to comprehension questions, using chat in the target language.
- Measureable progress (visible progress towards longer range goals) – The pace of learning can be faster in the cross-training scenario due to the similarities between the languages. Learners can see progress from the very beginning, which can motivate them to log in to the platform more often and stick with it for a longer time.
- Feeling of community (belonging to something greater than yourself; not isolated) – Being able to understand the L3 and other related languages can create a sense of larger, international, multilingual community, for example community of speakers of Romance or Slavic languages.
- Meaningfulness /Relevance/Utility – Identifying the optimal language to learn as L3, e.g., closely related to L2, can be viewed as meaningful and productive because less time will be needed to learn it.
- Usability (quality user interface, user experience) – Students learn grammatical features of language while being engaged in a reading activity. This is different from following grammatical syllabus and learning grammar rules as the main focus of the activity and can be motivating for the learners.
CONCLUSION

In this report, we have tried to illustrate how second language learning tasks and approaches can be implemented in LanguageNation by expanding on some of the instructional principles outlined in previous LanguageNation technical reports. Some of these ideas may be relatively trivial to implement in the current version of the LanguageLearning platform (and, indeed, much of the functionality may already be available), whereas others represent capabilities that are not currently available or even technically possible. To the extent that we can make progress towards realizing the types of pedagogical interventions suggested here in an online platform like LanguageNation, we can potentially impact a wide variety of learners and learning scenarios.

There is no silver bullet when it comes to engaging learners, and even online student retention efforts based on best practices from the literature can fail to produce desired results (e.g., Leeds, Campbell, Baker, Ali, Brawley, & Crisp, 2013). One of the underlying themes from much of the research is that motivation is complex and very personal. In his classic model of student dropout in higher education, Tinto (1975) notes that it is the interplay of the individual’s commitment and institutional characteristics that determine whether or not a student will persist. Learning a language to a high degree of proficiency requires a considerable commitment of time and effort, and sustaining engagement over any extended period of time can be challenging, especially in a virtual rather than physical learning community. Nevertheless, we believe that reflecting on the factors that we have highlighted here can improve the probability of success for creating potentially engaging experiences in LanguageNation.
REFERENCES


APPENDIX A – ENGAGEMENT SURVEY

Instructions: The following survey will give you a chance to rate your experience using LanguageNation. The questions are arranged in 13 blocks of 2 to 5 questions each. Please answer truthfully so that we can improve LanguageNation. The lowest rating is 1 star and the highest rating is 4 stars. If you feel that a question is not applicable to you, you may leave it blank.

<table>
<thead>
<tr>
<th>Usefulness</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using LanguageNation can improve my learning performance.</td>
<td>☆☆☆☆☆</td>
</tr>
<tr>
<td>Using LanguageNation can increase my learning effectiveness.</td>
<td>☆☆☆☆☆</td>
</tr>
<tr>
<td>I find LanguageNation useful to me.</td>
<td>☆☆☆☆☆</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ease of use</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning to operate the LanguageNation platform is easy for me.</td>
<td>☆☆☆☆☆</td>
</tr>
<tr>
<td>It is easy for me to become skilled at using the LanguageNation platform.</td>
<td>☆☆☆☆☆</td>
</tr>
<tr>
<td>Overall, the LanguageNation platform is easy to use.</td>
<td>☆☆☆☆☆</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attitude</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using LanguageNation is a good idea.</td>
<td>☆☆☆☆☆</td>
</tr>
<tr>
<td>I like using LanguageNation.</td>
<td>☆☆☆☆☆</td>
</tr>
<tr>
<td>It is desirable to use LanguageNation.</td>
<td>☆☆☆☆☆</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Enjoyment</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using LanguageNation is pleasurable.</td>
<td>☆☆☆☆☆</td>
</tr>
<tr>
<td>I have fun using LanguageNation.</td>
<td>☆☆☆☆☆</td>
</tr>
<tr>
<td>I find LanguageNation to be interesting.</td>
<td>☆☆☆☆☆</td>
</tr>
<tr>
<td>I forgot about time while using LanguageNation.</td>
<td>☆☆☆☆☆</td>
</tr>
<tr>
<td>I look forward to using LanguageNation.</td>
<td>☆☆☆☆☆</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Informational completeness</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>The LanguageNation platform gives me the service that I need</td>
<td>☆☆☆☆☆</td>
</tr>
<tr>
<td>I feel comfortable using the functions and services provided by the</td>
<td>☆☆☆☆☆</td>
</tr>
<tr>
<td>LanguageNation platform.</td>
<td></td>
</tr>
<tr>
<td>The LanguageNation platform provides sufficiently complete information.</td>
<td>☆☆☆☆☆</td>
</tr>
<tr>
<td>The LanguageNation platform provides information that is easy to comprehend.</td>
<td>☆☆☆☆☆</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using the LanguageNation platform was entirely within my control.</td>
<td>☆☆☆☆☆</td>
</tr>
<tr>
<td>I had the resources, knowledge, and ability to use LanguageNation.</td>
<td>☆☆☆☆☆</td>
</tr>
<tr>
<td>I was able to use the LanguageNation platform well for my learning purposes.</td>
<td>☆☆☆☆☆</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expectations</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>My experience with the LanguageNation platform was better than expected.</td>
<td>☆☆☆☆☆</td>
</tr>
<tr>
<td>The service level provided by the LanguageNation platform was better than I expected.</td>
<td>★★★☆☆</td>
</tr>
<tr>
<td>The LanguageNation platform can meet demands in excess of what I required from the service.</td>
<td>★★★★★</td>
</tr>
</tbody>
</table>

### Satisfaction

| I am satisfied with the performance of LanguageNation. | ★★★☆☆ |
| I am pleased with the experience of using LanguageNation. | ★★★☆☆ |
| My decision to use LanguageNation was a wise one. | ★★★☆☆ |

### Intention to continue

| If it is available, I will use the LanguageNation platform on a regular basis in the future. | ★★★☆☆ |
| If it is available, I will frequently use the LanguageNation platform in the future. | ★★★☆☆ |
| If it is available, I will strongly recommend that others use LanguageNation. | ★★★☆☆ |

### Quality

| The quality of LanguageNation compared favorably to other language learning experiences I have had in the past. | ★★★☆☆ |
| The LanguageNation platform improved on the quality of the course over other courses I have had. | ★★★☆☆ |
| The LanguageNation platform provided more individualized instruction than other language learning experiences I have had in the past. | ★★★☆☆ |

### Interactivity

| Learner-to-learner interaction was easy in the LanguageNation platform. | ★★★☆☆ |
| I learned from my fellow LanguageNation users. | ★★★☆☆ |
| Interacting with others through the LanguageNation platform became more natural as the course progressed. | ★★★☆☆ |
| The LanguageNation coaches attempted to elicit learner interaction. | ★★★☆☆ |

### Flexibility

| Using the LanguageNation platform allowed me to arrange my learning for the course effectively. | ★★★☆☆ |
| Using the LanguageNation platform allowed me to arrange my work schedule more effectively. | ★★★☆☆ |

### Individualization

| The activities in LanguageNation were relevant to my language learning goals. | ★★★☆☆ |
| The activities in LanguageNation were relevant to my language learning needs. | ★★★☆☆ |
| The level of challenge in LanguageNation activities was appropriate. | ★★★☆☆ |
| The LanguageNation platform provided adequate support (“hints”) when activities were difficult for me. | ★★★☆☆ |
| I received feedback on my language learning progress through LanguageNation. | ★★★☆☆ |
| The feedback that I received was useful. | ★★★☆☆ |
APPENDIX B – JOB-RELATED CHECKLIST

How often do you need to perform the following activities? How important are they to your job?

Communicative Objectives
- Arrange a taxi ride (directions, payment)
- Meet business contacts for the first time (formal)
- Set up cell phone service
- Navigate public transportation (payment, directions)
- Handle issues with apartment (kitchen appliances, trash pickup, etc.)
- Order food in restaurants
- Open a bank account
- Return a product to a store
- Ask for and follow directions/instructions
- Communicate basic medical needs
- Describe daily activities
- Express personal interests
- Communicate simple biographical information

Business Practices
- Invite people to a meeting
- Fill out forms
- Participate in an interview (as the interviewee/interviewer)
- Prepare and deliver a presentation
- Negotiate and close deals
- Discuss deals informally (drinks, dinner)
- Arrange meetings by phone
- Conduct meetings
- Compose letters/emails

Language Analysis
- Understand a dialog between well-educated native speakers on a complex topic
- Interpret that dialog into English
- Understand a dialog between native speakers using slang
- Interpret that dialog into English
- Translate/interpret complex materials from a particular scientific domain
- Translate/interpret spoken materials when the input is fragmented or contains errors
- Understand the context of a dialog when background information is not supplied or must be inferred
- Understand when speakers are “talking around a subject”
- Understand when speakers are deliberately lying or trying to deceive unintended recipients
- Translate/interpret speech from English into that language
- Translate/interpret written material from English into that language
APPENDIX C – EXAMPLE BEGINNING TASKS

This is a TBLT example with beginning learners, using Japanese as the example language. We recognize that this activity is not nearly as abstract, and, therefore, potentially not as automatable, as our main example. It does, however, illustrate how pedagogical tasks can be incorporated even for very novice learners, with the goal of training them to recognize discrete words and numbers in context.

- Play several clips of Japanese audio (learner is told that it is Japanese)
  - The goal of this activity is just to acclimate the learners to the general sound of the language
- Learner activity – is Japanese the language being spoken? Yes/No
  - Learner is played a number of clips and must decide whether the language spoken is Japanese or not
  - Difficulty could be manipulated by choosing languages that are more/less familiar as the non-Japanese examples
- Sorting activity
  - Sort a set of audio files into Japanese/not Japanese
  - Activity can be timed and turned into some kind of game
- Listening for discrete words in context
  - Learners must count the number of times that a particular word appears in a short audio clip.
  - Initial words could be loan words, such as “America” or “New York”, which can ideally be easily illustrated with photos
  - Words can be introduced with a matching activity between picture and word (users click on the written form of the word to hear it, even though they won’t be able to read it yet)
- Numbers in isolation and context
  - If needed, text-to-speech could be used for initial training purposes
  - Numbers should be introduced gradually in small “chunks” rather than “all at once”
    - E.g., 1 – 3, 1 – 5, 1 – 8, 1 – 10
  - After introduction of a “chunk”, learners could be asked to try to understand what numbers are being said in natural conversation (e.g., matching activity)
- Telephone number activity
  - Can combine review of locations with numbers (e.g., filling in a partially completed table of locations and associated telephone numbers)
  - This could be done in the context of an informational conversation (e.g., people giving basic information over the phone)
APPENDIX D – EXAMPLE SPEAKING TASK TEMPLATE

Target Task:
As a Foreign Service information officer, determine the veracity of a number of claims made in the local morning newspaper (e.g., “US jazz star to perform at embassy,” “US involved in toxic waste dump north of the capital”), then respond to informational requests from local reporters.

Variables to manipulate:

- Type of requests (+/- here and now)
- Sensitivity of response (i.e., claim is true, but not allowed to confirm)
- “Pushiness” of local reporters
- Amount of time before first reporter calls (+/- planning time)
- Number of informational requests about single topic
- Number of topics about which information is requested
- Availability of talking points to use in response

Possible pedagogical tasks:

- Listen to recording of experienced officer responding to information requests and identify which event on embassy calendar is being referred to
- Listen to recording of experienced officer responding to requests and rate responses as “appropriate/inappropriate”
- Listen to recording of information request and select most appropriate response out of several options
- Match “talking points” with news items from local paper
- Respond to questions based on talking points