RUNNING HEAD: CONCEPT KEYS

Chunking, Priming, and Active Learning: Toward an Innovative and Blended Approach to Teaching Basic Speaking and Listening Skills

by

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Abstract

This paper examines an innovative method of teaching basic skills necessary to effectively produce and receive messages while reducing the potential for misunderstandings. As educators, developing such methods is paramount to student success. Likewise, success beyond college depends heavily on basic speaking and listening skills. Whether a student continues within academia or enters the workforce, s/he must possess the skills necessary to communicate in a competent fashion. This paper will first examine the theoretical distinction between skills and competence as well as research in the areas of memory and cognition. Then we propose a method grounded on these precepts that also utilize e-learning technology to bring micro-lessons into the learners environment. Concept Keys leverages the established educational concepts of chunking, priming, and active learning into a learning support system that enables students to integrate information into their memory and into their skill base. Example exercises are also presented as well as a call for further research.

Keywords: Competence, Communication Instruction, Communication Skills, Listening Skills, Chunking, Priming
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Research indicates individuals displaying competence in speaking and listening have greater occupational (Evers & Rush, 1996; Zorn & Violanti, 1996), relational (Burleson, 1995; Flora & Segrin, 1999), and personal (Segrin & Givertz, 2003) success. The substantial amount of time spent engaged in communicative acts on a daily basis (Wolvin & Coakley, 1996) should be enough to continually motivate educators to develop effective teaching strategies that aid in the development of these skills. But what is the best way to prepare today’s student to become a capable speaker and listener? This paper attempts to answer this question by offering a method grounded in the educational theories of chunking and priming and utilizing web-based technology to enhance active learning. Finally, instructors are encouraged to adopt the programs to their own classroom setting while continuing to improve upon their effectiveness, reach, and relevance to a multitude of essential skill bases.

Moving Beyond the Skill/Competence Dichotomy: A Reconceptualization via Active Learning

An ongoing debate within the discipline of communication education is whether one can be taught how to produce and receive messages effectively (Dewit-Brinks, & Rhodes, 1992) and, if so, what is the best method for achieving this goal (Duran & Zakahi, 1987; Watt, 1993; Janusik, 2002). A main component of this debate is the recognition that simply having a cognitive skill base will not necessarily enable an individual to display an appropriate level of behavioral competence (Argyle, 1967; McCroskey, 1982). While skill refers to the communicator’s ability to perform a certain behavior, competence is the actual demonstration of an appropriate communicative act in a given situation. While discernment between competence
and performance may be theoretically necessary, it is not as useful pragmatically. Research utilizing Boyer’s (1990) notion of the scholarship of teaching and learning has shown that faculty should “expect students to move beyond foundational knowledge and develop higher-order skills” (Cottrell & Jones, 2003, p. 179). It is the responsibility of the instructor to design courses in ways that facilitate an active learning environment. Such an environment is “learning-centered” as opposed to teacher- or student-centered (Gravett & Petersen, 2002) and reaches students through innovative teaching methods that enable them to own the material.

As explicated in the following section, the most viable way to instill behavioral change and resulting competence, is to rely on innovative teaching techniques to establish a base level of skills then employ novel testing methods to ensure students can relate that information to their inherently different lives and overall ways of communicating. Consequently, if message production and reception training is going to meet the needs of students, we need to develop innovative means of both delivering the message and inviting the active participation of the student. This system should be based on sound knowledge of how we learn. The concepts of chunking and priming offer an excellent theoretical frame in which we place our learning system.

**Applying Chunking to Skill Building**

The concept of chunking is largely attributed to the work of Miller (1956) who distinguished between bits and chunks of information. Chunking is the process of organizing and grouping bits of information into familiar units or chunks. The ability to chunk information helps an individual remember more and gives a means of accessing the information that is ultimately stored in his or her memory. More importantly, chunking increases “the amount of information we can deal with” (Miller, 1956: 95). Miller also suggests that we recode information constantly
in an effort to assimilate new information with current knowledge. Therefore, the process of chunking also seems to serve as a mechanism for reinforcing information. For instance, as we learn new information, if it sounds familiar or if it fits into an existing category, we tend to remember and relate the new information to the existing category (Higham, 1997; Gobet & Simon, 1996b). This allows for more powerful connections to be made by the learner.

Chunking serves as both a triggering device and as a code-building device for our memory. The *triggering aspect* of chunks relies on the strength of a chunk or group of related chunks. Since chunks are arranged in a hierarchical fashion, the most memorable will consist of information that is most relevant to the individual attempting to learn (Servan-Schreiber & Anderson, 1990). *Code-building* is often accomplished through replication of chunks or related information that allows the participant to recall chunks for later use. As students build a system of codes (i.e. chunks) patterns begin to emerge with which they are able to relate to other chunks and eventually build larger and larger stores of information (Koch & Hoffmann, 2000).

Consequently, students are able to develop skills that are more complex than simple rules yet straightforward enough to be stored in memory enhancing expertise in a given competency.

Chase and Simon (1973) and Gobet and Simon (1996b) report that three areas of expertise are important in skill development: pattern recognition, selective searching, and rich knowledge in the domain of expertise. In looking at the performance of master chess players, Gobet and Simon (1996a; 1996b) concluded that professional chess players seem to rely on chunking to categorize their knowledge and to access information. They seem to use their catalogue of information to look ahead and make strategic choices about what move to make next. It stands to reason that this concept can be extended to communication; if given a method of chunking information into useful categories, communicators should be able to build a
knowledge base of skills and ultimately be able to access this information to make decisions about what type of skill they need to use in a given situation. Such a method should give students information that can be chunked as well as suggestions for ways to create these chunks. In addition, the system should build the store of knowledge about producing and receiving information. Finally, the system should provide a means of accessing the knowledge in a meaningful way. Just as chess players seem to store chunks about patterns of pieces in their long-term memory, students need to store chunks about communication strategies and techniques in their long-term memory.

Another element that must be included in any effective instructional effort is repetition. Just as our memories are organized and stored in chunks, they are reinforced through repeated exposure to an idea, concept or skill. In one regard chunking provides an avenue for repetition insofar as the chunks are built as bits of information and compressed or integrated into a chunk. This is particularly evident in observations of a variety of ritualistic behaviors, such as many compulsive behaviors (Graybiel, 1998). Although message production and reception are not ritualistic behaviors, it stands to reason that we engage in these acts often enough (see Wolvin & Coakley, 1996) that much of the skills considered necessary for communicative competence are performed in chunks. As we learn more skills, we seem to build cognitive and neural sequences that may help with the use of these skills.

Further research in the area of learning supports this conclusion. In three experiments on sequence learning, Koch and Hoffmann (2000) found clear support for the idea that sequence learning can be thought of as a chunking process. Students who are attempting to learn a series of related concepts can use their theory of “relational chunking.” By chunking information that is similar into large sequences of information, skills can be taught and competence in a certain area
can be improved. Developing skills or sets of skills, such as those evidenced by effective communicators and listeners, can be thought of as a learning process in which the steps and concepts are presented in a sequential pattern. Once the pattern has been learned, the issue turns to how the individual can recall the concept for use when he or she has so much information in so many chunks stored in memory. Priming theory responds to this concern.

**Using Priming to Recall Chunks**

One theory that describes how information is recalled is priming theory. Priming, when viewed as spreading activation, works to retrieve information from memory when a priming stimulus is presented and sets off a chain of events in which one node of a concept is linked to another (Dosher & Rosedale, 1989; Ratcliff & McKoon, 1988). Ratcliff and McKoon (1998) suggest that:

the prime and the target concept form a compound cue and that this compound cue interacts with memory to produce a value of resonance, goodness of match, or familiarity that is determined by associations in long-term memory between the prime and target (405).

Therefore, if the prime is directly related to the target concept, the individual will have an easier time recalling the concept as a chunk of information. This chunk of information, as related to communicative competence, should include both the appropriate behavior and the situation in which the set of behaviors should be used. If a training or instructional system could build such a pattern of association and provide a convenient chunking mechanism that was closely connected to effective communication skills, this information should be easy to access by triggering the associations.
Beyond Chunking and Priming: Utilizing Personal Relevance and Web-Based Technology

Continuing to seek new and innovative ways to educate students is paramount to teaching skills as important as speaking and listening. Strategic deviations from the formal classroom setting (i.e., lecture focused instruction) can incorporate a sense of practicality and fun, which can enhance learning (e.g., Gravett & Petersen, 2002). For instance, enhancing the relevance of material, students are encouraged to fuse new information with present knowledge forming a more thorough understanding of the subject at hand. Thomas and Busby conclude that “self-managed learning” (2003, p. 228) can foster independent critical thinking and increase competence. Likewise, Cost, Bishop, and Anderson (1992) “encouraged [students] to explore and understand what words, phrases, or topics get them emotionally involved; what their listening strengths and weaknesses are; and how to recognize what motivates other people to speak and behave as they do” (p. 42). By making listening training personally relevant the students were able to improve their listening skills. As explained in more detail below, our system utilizes such self-managed learning and personal reflection which has shown to increase satisfaction with learning.

Today’s age of technology presents a new challenge to relevance. The reality of student reliance on technology for all aspects of life including education, however, also gives instructors new tools that can improve learning and enhance student participation. The more ways in which instructors can relate material to students the more likely the student will retain this information. Aside from distance education, it seems as if technology in the classroom may consist of a few PowerPoint slides and the overuse of video clips. There are much richer resources available that we can tap into in order to improve student’s learning experience. A 2001, survey of secondary education instructors conducted by Bonk found that “a lack of interest in the Web for teaching
was not an obstacle for these respondents” (p. 8). Instead, it was a lack of online support and an overall reluctance to adopt online resources due to a lack of training.

Thus this report introduces a focused approach to classroom interaction grounded in educational theory (i.e., chunking, priming, active learning, etc.) that blends web-based education with face-to-face instructor direction and support. Concept Keys (Powers, 2003) provides students with small bits of information over a long period of time culminating in a vast store of knowledge about a set of skills and how to perform these skills in specified contexts. Along with daily commentary, or keys, this method has students rate these keys according to personal relevance. Additional classroom activities are also presented which add to the student-teacher interaction and increase the chances of information retention and skill acquisition. The complete instructional system includes the following elements:

- 50 daily gentle reminders by email of the Program containing a live link to the website
- 50 daily Keys to Success at their CK website account, one each school day
- 50 daily micro-lessons expanding on the Keys at their CK website account
- 50 daily student interactions within the Food For Thought question area that take less than 5 minutes to process but consists of four questions for a total of 200 student engagement and learning actions
- 10 weekly student retention quizzes adds another 50 employee engagement and learning actions
- 10 weekly student self-selection of the Most Important Key from the previous 5 Keys adds 10 more engagement and learning actions
- 10 weekly student self-determinations of how to apply the Most Important Key immediately right in the learning environment adds 10 more engagement and learning actions
- Individual student continuous access to all previous material and the continuing time lag analysis of their daily engagement in the program
- Individual student downloading of all the above material at the conclusion of the program
- Individual Certification Examination
Teachers receive the following:

- Program Reports of all participant responses and time lag analysis of daily engagement for inclusion as part of the student evaluation. This information can be subjected to further group calculations based upon established demographics.
- Instructors Manual containing instructional options and activities.

A Chunking Theory Application to Improve Communicative Quality

Concept Keys (CK) represents a recent innovative approach to learning communication skills that leverages the concepts of chunking and priming plus the added benefit of learning support systems within the more traditional learning model to provide greater opportunity for teachers and trainers to impact the quality of participant learning outcomes (Powers, 2003). CK is based on the notion that small units of information about complex concepts that are systematically delivered into the most appropriate learning environment within a meaningful support system provides the greatest opportunity for learners to acquire, retain, apply, and improve communication skills.

How the Keys to Effective and Competent Actions Work

Being considered competent in any interaction is largely based on ones communication behaviors. These behaviors are based on the skills one displays in any given interaction. Skills in general are based upon two fundamental components: 1) Information acquisition and retention about the cognitive processing function and 2) Information acquisition and retention about the behavioral options and conditions. Each of these components contains interrelated “chunks” that are identified as Keys to the Concept under question (e.g., message production, message reception, customer service, leadership). These Keys are collections of bits of information (both cognitive and behavioral) that, when taken together, are more significant and have a greater

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1 Other programs are available and have been proven successful in both academic and industry settings. New programs are currently in development and future projects are invited.
impact than when treated in isolation. While it is true that each “bit” consists of smaller units of information, the learning outcomes are not advantaged by such minute knowledge but rather by solid stores of related bits.

CK has developed 50 Keys to success in the areas of effective communication and effective listening. Each Key is a brief statement reflecting a specific collectivity of bits leading to enhanced skill in the desired area. The brevity of each Key allows learners the greatest opportunity for understanding, retention, and cross application at both the cognitive and behavioral levels. The CK system involves delivery of only one Key per day via an e-learning portal accessed directly from the learner’s preferred learning environment. Each Key is followed by four brief paragraphs, usually of no more than 2 or 3 sentences, the content of which reflects varying degrees and combinations of explanation and motivation. Explanation is often in the form of more specific description of one or more of the bits associated with the Key or contexts within which the Key may be identified more easily. Motivation consists of varying combinations of descriptions of negative outcomes from the non-use of the Key and/or positive outcomes from the use of the Key. (See Appendix A for sample Keys.)

Some of the Keys are more representative of cognitions while others are more representative of behavioral options. As previously argued, both are frequently interactive and essential to the ultimate improvement of an individual’s skill. Without internalized knowledge of information processing options as well as behavioral options, learners will not have choices from which to draw if attempting to communicate more effectively when such an effort is dictated by the context and situation. Furthermore, some Keys are repetitive in nature and cross over potential applications. The connotative aspect of meaning via language and the distinctive
differences between contexts allow both internal repetition and cross application of imagery (priming) across Keys.

Thus, the CK learning system contains a number of built-in learning factors designed to enhance the learning process: 1) Bits of Information, 2) Bite-sized Keys (Chunks), 3) Explanation, 4) Motivation, 5) Cognitive information, 6) Behavioral information, 7) Repetition, and 8) Multi-context imagery (priming). However, the complete CK learning system expands the potential for positive learner outcomes even further through the easy integration of the following aspects of learning support: 1) Information delivery in learner’s application environment, 2) Participation in overt repetition of Keys over time, 3) Responses to Questions about the value of each Key, 4) Participation in weekly retention assessment activities, 5) Self-selection of weekly Most Important Key with stipulated application plan, 6) Participation in enjoyable connecting events, 7) Participation in Team-learning activities, 8) Complete clarity of exact expectations, 9) Integration of learner self-selection of most important information over the complete set of 50 Keys in each area and 10) Certification via an online examination.

This method provides the necessary support for learning. Students meet on a regular basis in class and the teacher serves the function of Learning System Coordinator. Such a dialogic approach has been shown to improve learning outcomes when employed in a similar way via learning tasks (Gravett & Petersen, 2002). There are many options available to the teacher, some more appropriate in one level of learning than another. A complete Instructor Manual detailing multiple options is available for all teachers who request this information at the CK website. The following case study will provide a foundational understanding of one application of the CK learning system.
Students were informed of the Keys project as a supplemental part of the learning process in a class that would allow them to improve their skill in Communicating Clearly while the class focused upon larger traditional content issues in the Business and Professional Communication course. Keys were scheduled to avoid delivery on Spring Break. Student teams were formed and leaders selected. The leaders (referred to as the Class Advisory Group) met with the teacher over lunch to discuss the project and to select the most appropriate support activities. In this case, each student was expected to send an email to the teacher before noon on Mondays describing which of the preceding weeks 5 Keys was the Most Important Key (MIK) relative to the individual’s view of self and projected future needs. Thus at the end of the term, each student would have self-selected 10 Keys as MIKs on a personal basis. Students were informed that they would be tested over the Keys at the conclusion of the project and the expectation was that they would retain each of the 50 Keys exactly and in the exact order in which they arrived. One point would be awarded for each MIK recalled correctly and $\frac{1}{2}$ point for each remaining Key with $\frac{1}{2}$ point deduction for each sequence error. The project was worth 30 points within the course grading scale of 300 points. Two bonus points were awarded to all students who correctly remembered 49 or 50 of the Keys.

Furthermore, each of the five teams would have an opportunity to participate in a weekly contest designed to help the class remember each Key. Leaders determined the nature of the contest each week (i.e., skits, anagrams, poetry, song lyrics, anything goes, etc.). The rules were that the contest had to be fun, the focus had to be helping everyone to remember the team’s assigned Key, each team would have no more than 1 minute of class time in the contest, the class would vote on which team did the best job (teams were not allowed to vote for themselves), and the members of the winning team identified by the leader as having participated meaningfully in
the contest would all receive 1 bonus point toward determining their final grade. Finally, the
Keys were discussed in class following each contest for a relatively brief period prior to
discussing the regular class material.

Feedback from students was overwhelmingly positive (4.8 average on a 5.0 semantic
differential using the descriptors of Not A Valuable Learning Experience and Definitely A
Valuable Learning Experience). There were, however, two complaint areas in response to the
question, “What did you find most negative about the CK learning project?” - 1) the need to
remember all 50 Keys and 2) the simplicity of the Keys. Of the 79 students in the class, 62
remembered either 49 or 50 of the Keys, 10 remembered between 45 and 48, 5 remembered
between 40 and 44 Keys, and 2 remembered 8 Keys.

Conclusion

The CK blended-learning system has great potential to enhance learner skill outcomes in
that the system helps students/trainees build a code for effective communication and effective
listening. As Gobet and Simon (1996b) suggest, this type of code building develops a rich
expertise in an area and the ability to recognize patterns among the information. Because the
separate Concept Keys provide reinforcement and repetition of basic concepts, the student is able
to build chunks of information related to effective behavior and is better able to access this
information in memory. CK also incorporates the principle of priming in its structure. One way
that CK uses priming is by delivering stimuli (Keys) that help students access their chunks. In
addition CK uses case studies and in-class exercises to build an association between the keys and
best practices communication behaviors. This type of training builds a system of associations
that can be readily accessed or primed when the student faces a similar situation. Moreover, the
recent technological evolution has opened a new door for teachers to impact the quality of
education for their students. CK provides an exciting, innovative means of incorporating technology into instruction and skill development. While further validation is needed in terms of the longitudinal effects of such a system (i.e., can students retain Keys over a long period of time), an outline of an innovative way to teach skills deemed necessary in everyday life has been provided.
References:

**Argyle**


**Cost, Bishop, & Anderson (1992)**


**Biographical Notes**

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Appendix A
Sample Keys
Communicating Clearly

Key #1: Take personal responsibility for quality communication!

- We have so many easy excuses that we can make when other people misunderstand what we really mean. "You didn't listen to me!" "My boss is the dumbest critter on this planet!" "I know what's happening here, you've got an attitude problem, that's what! Now listen up the next time I'm talking!" We seem to always have the option of placing blame upon the other person--or we could take the wiser path of accepting part of the responsibility ourselves.

- Our actual communication results will improve only when we recognize that part of the blame is within ourselves. This does not mean we are totally at fault. However, ultimately, the real responsibility for personal success or failure lies with us and our own communication skills--not with others.

- Our career success depends upon our communication results. Communication results depend upon your accepting responsibility for communicating clearly and effectively--then you have a reasonable chance.

- Set your goal to be a successful communicator--regardless of the skills of the listener. Accept the personal challenge of being excellent.

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Communicating Clearly

**Key #28: Avoid 'trigger' words!**

- Some words trigger negative emotions almost automatically. If the listener gets upset and begins to think angrily about some concept other than your specific message, you will not be able to achieve communication clarity.

- Sometimes, without realizing it, we use words that trigger emotions and reactions. As you get to know others better, you can become familiar with their emotions. You begin to know what can easily upset them. When you are striving for communication clarity, that is the last thing you want to do--unless of course the negative emotion is exactly what you are trying to communicate.

- It is usually critical that you avoid these areas to be sure that your listener is giving you their complete attention. Sometimes there are situations when the emotional object is the subject of your discussion and you could not avoid arousing negative emotions. Be alert to this possibility and set an appropriate mood to increase attention and decrease the mental wandering.

- Wherever possible, learn what triggers emotional reactions and avoid them in general communication situations. Your potential for clarity will increase.

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Listening Effectively

Key #4: Stop talking!

- We cannot talk and listen at the same time. Our brains are pretty good but not that good.

- We must give others an opportunity to complete their thoughts. If you start talking, the other will stop talking. Thus, the speaker stops giving you information. You wind up with only a partial picture.

- If you start talking when you should be listening, the speaker will assume that you already have the full information. The speaker will expect you to carry out instructions to the letter. Unfortunately, you will likely fail because you did not get complete understanding.

- Become a quality listener. When listening, stop talking and pay attention. It will pay off with better understanding.

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**Listening Effectively**

**Key #46: Repeat your understanding of the message!**

- Communication is difficult. The speaker could make errors. You could misunderstand. Our goal is to fully and completely understand the speaker's message.

- The key to successful communication is to understand that it involves two people. Either can make mistakes.

- If you do not bother to explore the possibility of error, you are not listening effectively. It is the other's responsibility to communicate clearly. It is your responsibility to listen effectively. You are the one who will pay the major price for misunderstanding.

- State in your own words, your understanding of the other person's idea or message. Ask them if you are representing their idea correctly. Adjust your thinking as new information becomes available. Your results depend upon accurate information.

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