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Developing Expertise Through a Deliberate Practice Project

Learning is not attained by chance, it must be sought for with ardor and attended to with diligence.
Abigail Adams

1. Introduction

Students in American Sign Language (ASL)/English Interpreter Education Programs (IEPs) in the United States are faced with the daunting tasks of mastering interpreting theory and skills while often still acquiring ASL as a second language. Interpreter educators are asked to provide a foundation in both interpreting and language skills in a mere 4 years for baccalaureate degrees (and in 2 to 3 years for associate of arts programs). Witter-Merithew and Johnson (2005) explore the length of time required for IEP graduates to gain national certification. They cite the following 2005 statement from the Registry of Interpreters for the Deaf (RID) website confirming that many graduates are still not ready to achieve certification by the time they graduate: "[G]raduates should be able to pass the written portion of the national certification examination, but . . . it typically takes 3–5 years of experience and in-service training, post graduation, to pass the performance portion of the national certification examination" (Witter-Merithew & Johnson, 2005, p. 77).

Candidates who successfully pass the National Interpreter Certification (NIC) administered conjointly by the National Association of the Deaf and RID must demonstrate a minimum level of competence. Although there are now several levels of certification (i.e., certified, advanced, and master), reference here is made to certification generically. As the national standard of professional interpreting, RID certification implies a certain level of expertise. Ericsson and Smith (1991) define expertise as "what distinguishes outstanding individuals in a domain from less outstanding individuals in that domain" (p. 2). Ericsson (2001) goes on to further refine this definition by stating, "Expert performers can reliably reproduce their performance any time when required such as during competition and training" (p. 194).

The development of expertise requires structured time-on-task (Ericsson, 2007a, 2007b). Ericsson argues that merely practicing a skill repeatedly does not result in expert performance; however, deliberate practice can improve performance and eventually lead to expertise. *Deliberate practice* is defined by Ericsson (2007b) as "tasks that are initially outside of their current realm of reliable performance, yet can be mastered within hours of practice by concentrating on critical aspects and by gradually refining performance through repetitions after feedback" (p. 692). Examples of deliberate practice include musicians devoting hours to mastering technical skills or basketball players repeating free throws.

A unique aspect of learning a signed language, generally speaking, is that students are asked to master both the intricacies of language and psychomotor skills. Deliberate practice can help students deepen learning that is taking place in the classroom. In addition to the activities performed when practicing deliberately, another factor can significantly influence a novice's progression to expertise. *Mindset,* which is defined as the perspective with which one approaches new tasks, can support or undermine one's efforts. Dweck (2006) describes two mindsets:

fixed and growth. A *fixed mindset* perceives intelligence and ability as immutable and not subject to change despite effort. A *growth mindset* "is based on the belief that your basic qualities are things [that] you can cultivate through your efforts" (Dweck, 2006, p. 7).

Since developing expertise requires explicit instruction and deliberate practice there are implications for educators. *Action research* is a form of research typically undertaken by educators with the intent of improving teaching. Set in the classroom, action research employs a "systematic, problem-based, data-based and valid approach" to research (Gay & Airasian, 2000). After identifying a problem or topic, the steps in this research methodology include data gathering, decision making, and instructional design to enhance learning.

This article presents the findings of an action research project undertaken at Northeastern University addressing the factors of expert performance, deliberate practice, and mindset through the lens of the Growth-to-Competence (GTC) Log requirement of interpreting skills courses. Although the project was originally conducted with ASL interpreting students, the implications for deliberate practice are relevant to spoken and signed language interpreter educators worldwide.

2. Interpreter education

Witter-Merithew and Johnson (2005) identified four issues that IEP students raise when asked about their pre-service educational experience. These issues include insufficient mastery of ASL, the challenge of simultaneously learning ASL and interpreting, the length of time needed for sufficient professional development in order to pass national certification standards, and the density of the curriculum (i.e., the amount of information incorporated into the program).

The Entry-to-Practice Competencies identified by Witter-Merithew and Johnson (2005) specify 34 attributes and skills that "are intended as a comprehensive statement of essential skills, knowledge, and attributes required for successful practice based on current market and practice trends with attention to indicators for future trends" (p. 71). Although these 34 traits are desirable, it is recognized that recent graduates of interpreter education programs have not mastered them. According to Witter Merithew and Johnson, "[T]he field of interpreter education will have to continue to evolve in order to graduate entry-level practitioners who are certification-ready at the time of, or soon after, program completion" (p. 76).

Contemporary adult learning theory stresses the need to offer authentic learning opportunities that allow students to take control of their own learning. Reigeluth (1999) challenged educators, stating, "To help all learners reach their potential, we need to customize, not standardize, the learning process" (p. 27). IEP curricula are dense. Simultaneously balancing the desire to expose students to all that they need to know and allowing students to integrate this information into their own schema for learning presents all IEPs with a significant challenge.

3. Expertise, deliberate practice, and coaching

Becoming a competent interpreter involves the mastery of not only ASL (i.e., competency in the development of linguistic and psychomotor skills) but also the interpreting process. There are three basic steps in the process of facilitating psychomotor skills: Imparting knowledge content, imparting basic skills, and developing proficiency (i.e., speed, stamina, and accuracy; Romiszowski, 1999). Educator feedback that is provided on psychomotor skills practice should focus on results and on correcting performance. This is a core component of deliberate practice. In addition, students must be encouraged to engage in self-reflection about their skills to develop the necessary metacognitive abilities to monitor their work. Care must be taken, however, that these self-reflections are tempered with the reality of instructor feedback. Kruger and Dunning (1999), in their discussion of self-assessment, illustrate the pitfalls of unskilled practitioners engaging in self-assessment. The authors describe different studies in which such unskilled practitioners lacked the meta-awareness to see their own lack of

proficiency and, as a result, overestimated their abilities. With faculty guidance, students can develop the awareness necessary to accurately critique their own work.

According to Ericsson (2007a), Galton's[2] studies in the 19th century concluded that innate factors had more to do with the attainment of superior performance than did environmental elements or learning. The view that biology—not environment—was deterministic held until the late 20th century, when a burgeoning body of research found that measures of IQ were not predictive of expert performance and that differences between superior performers and ordinary ones "nearly always reflect attributes acquired by the experts during their lengthy training" (Ericsson, 2007a, p. 10). Galton's argument that nature trumps nurture has been challenged through contemporary research in which authors studied expert performance. Colvin (2008) stated, "Some researchers now argue that specifically targeted innate abilities are simply fiction" (p. 6).

There is an extensive body of research available on the development of expertise and expert performance in areas as diverse as music, dance, and athletics (Colvin, 2008; Ericsson, 2001, 2007a, 2007b; Ericsson & Smith, 1991; Ericsson, Charness, Feltovich, & Hoffman 2007; Gladwell, 2008). The techniques used by experts in other fields to achieve superior levels of performance can inform interpreting pedagogy to facilitate the development of expert performance among novice interpreters. This may result in more rapid professional development that may shorten the time between graduation and attainment of professional credentials.

Deliberate practice includes several specific components. Before practice begins, students—with instructor input—set improvement goals for specific performance. Next, the instructor devises training activities to incrementally improve precise aspects of performance. Students engage in practice activities for a specific period of time. Finally, an instructor or coach provides feedback so that the activities can be repeated and improved (Clark, 2008).

For example, Clark (2008) reported on a study conducted by Zimmerman (2006): In this study, the author assessed the improvement of college basketball students' free-throw skills. The study included three steps: (a) goal setting, (b) performance monitoring, and (c) self-reflection (which enabled the participant to make adjustments after missed throws). Participants were divided so that the first group engaged only in goal setting, the second group engaged in both goal setting and performance monitoring, and the third group engaged in all three steps including self reflection. The first group demonstrated performances that were inferior to those of the second and third groups. With basketball free throws, students can self-monitor performance readily, regardless of whether the shot is made. This model may inform approaches in interpreting pedagogy. However, interpreting students may lack the metacognitive skills necessary to ascertain whether an interpretation is successful; hence, instructor feedback is crucial.

Winston (1990) provided an example of using coaching techniques with interpreting students. Although very similar to the process described by Ericsson (2007b) for deliberate practice, in this case, individual goal setting was not undertaken in conjunction with students. Winston identified "accent reduction" as the goal and invited students who were interested in improving their "accents" in ASL to participate in the study. Initially, students filmed themselves signing a 5-minute text. Then, these samples were analyzed for two specific components: sign articulation and overall gestalt.[3] The instructor reviewed the tapes and highlighted areas for improvement in either of the two specific aspects. Then, students were encouraged to practice viewing their own tapes, applying selective watching techniques to identify these errors as well as watching native signers to observe proper execution. In addition, students were encouraged to copy or shadow these features with the intent of incorporating these markers into their own ASL discourse. After additional practice and meetings, the instructor noted improvement in both sign articulation and gestalt production among the participants. The students reported that this structured approach to accent reduction was beneficial.

Through the process of deliberate practice, physiological and cognitive mechanisms are gradually changed, thus allowing for performance improvements. One such mechanism is that of *anticipation.* Experts in several domains (i.e., typing, chess, and tennis) demonstrate an ability to anticipate moves before they occur. Interpreting students can learn to use anticipation in their work as well, even if they may not be able to predict the content of

[2] Sir Francis Galton (1822–1911) created the field of eugenics. In *Hereditary Genius (1869)*, he argued that attributes such as intelligence were determined strictly by heredity. He advocated selective breeding to enhance these inherent qualities.

[3] Winston (1990) describes *gestalt* as including "eye gaze, use of space, head nodding and phrasing"(p. 6).

interpreting situations. For instance, knowing that inquiry texts have predictable components such as turn taking and adjacency pairs can allow an interpreter to anticipate what may follow an utterance.

Time-on-task when engaging in deliberate practice is also an important consideration. Acute concentration is an essential ingredient of deliberate practice, but there are obvious limitations to the amount of time in which one can practice at peak levels. Ericsson (2007b) reported that experts practice daily for a period of 1 to 5 hours, depending on the domain. Over time, the accumulation of daily practice contributes to the development of expertise. The expectation of hours of daily practice for students and practitioners should be made explicit in interpreter education.

Research has indicated an ideal target exists and must be met in order for time on task to achieve expert performance. For example, a study of expert violinists revealed by the age of 20 years, those destined to be world-class soloists had logged more than 10,000 hours of practice, as compared with 4,000 hours for violinists preparing to be music teachers. Studies of experts in chess and other domains indicate the presence of a "10-year-rule" that is seen as an average period of intense preparation needed to perform at the international level in sports, arts, or the sciences (Ericsson & Smith, 1991; Horn & Masunaga, 2007). This 10-year-rule, or 10,000-hour practice minimum, is also evident in the accomplishments of many world-class performers ranging from Mozart to the Beatles (Gladwell, 2008).

A pedagogical implication from research on expert performance and deliberate practice is that interpreter educators must engage with students in a relationship akin to mentoring or coaching, in which individualized goal setting and feedback become an integral aspect of the learning experience. From this pedagogical implication stems yet another implication: that class time may need to be restructured to enable more individualized face-to-face feedback opportunities, or that time for faculty–student interaction must occur outside the classroom. This expectation may be difficult to implement, given the current staffing patterns in interpreter education programs.

Interpreter education programs often rely heavily on adjunct teaching staff. In the *ASL Interpreter Education Programs Needs Assessment: Final Report,* Cokely and Winston (2008) reported that of the interpreting education program teachers who responded to a national (U.S.) survey, only 38% were full-time staff members. The remaining 62% were adjunct staff. Because part-time staff members earn relatively modest amounts and are not compensated for time outside of instruction, opportunities for one-on-one feedback for students must occur in the classroom. If deliberate practice is incorporated into the pedagogical approach of interpreter education, then a key element will be restructuring faculty resources so that coaching time with students is abundant.

4. Mindset

Mindset can affect expert performance. Dweck (2006) is a recognized leader in the study of mindset within the broader field of educational psychology. Mindset research asks whether people come to believe that the ability to learn is biologically based on factors beyond our control (genetics) or whether learning can ultimately be influenced through instruction and practice. Those who believe that qualities such as intelligence, aptitude, and ability are immutable and bestowed at birth are described as having a "fixed mindset" (Dweck, 2006, p. 6). This view harkens to that of Galton from the 19th century (referenced earlier in this article; see Footnote 2).

A domino effect stems from the belief that intelligence is static. There is a tendency to avoid challenges, to give up easily when faced with obstacles, to see effort as fruitless, to ignore constructive criticism, and to feel threatened by others' success. This *fixed mindset* results in a failure to achieve one's full potential. Studies across domains and ages show that this tendency appears very early in life and persists throughout adulthood. Because the belief is that how one performs is an absolute reflection of who one is, those with fixed mindsets are risk averse.

On the other hand, the *growth mindset* embodies the belief that basic qualities such as intelligence and ability can be developed through effort (Dweck, 2006), which leads to a tendency to embrace challenges, persist despite setbacks, and see effort as a path to mastery. People may still experience failure, but instead of feeling demoralized and worthless, they will seek to learn lessons from the experience and use those lessons to inform future successes.

From the standpoint of learning, a growth mindset is desirable, as it allows for openness to new approaches. Conversely, a fixed mindset can result in resistance to change and experimentation. Dweck insists that people can change their mindsets through education. Often, by learning about fixed and growth mindsets, people who are of a fixed mindset can take steps toward a growth-oriented mindset. Changing one's mindset requires diligent effort to avoid falling into old patterns of thinking that may limit achievement.

5. Action research context

In order to provide a context for the action research project, an overview of the ASL Program at Northeastern University (NU) is needed. Housed within the College of Social Sciences and Humanities, the ASL program at NU is a 4-year baccalaureate program that offers a major in ASL/English interpreting as well as several dual majors for students who wish to combine knowledge of ASL with training in other disciplines (e.g., psychology, theater, and human services). Commonly referred to as the "day program," this program requires the completion of 129 credit hours and offers courses in ASL, Deaf Culture and History, Linguistics, and Interpreting Skills. In addition to these core requirements, students typically enroll in additional core curriculum courses, thus providing them with an even stronger foundation in the liberal arts.

The interpreting track consists of four skills courses: Interpreting Inquiry Texts, Interpreting Narrative Texts, Interpreting Expository Texts, and Interpreting Persuasive Texts. When NU transitioned from a quarter-based system to a semester-based system in 2001, the ASL program revised the curriculum to better prepare students for workplace demands upon graduation. A study of typical assignments for recent graduates revealed the frequent occurrence of one-on-one interactions that involve dialogue interpreting and that are driven by inquiry interactions (e.g., doctor/patient appointments; Cokely, 2005). Yet nowhere in the existing curriculum were students explicitly taught the nature of inquiry texts or the demands of dialogue interpreting. Therefore, the curriculum revision was based on interaction and text types that students will encounter in the field after graduation.

Students in the day program are typically between the ages of 18 and 21 years. They begin the interpreting track as juniors. Some students transfer in at this time from other interpreter education programs, whereas many others continue into the interpreting track after having begun their college careers at NU. Students in the day program attend school full time. Furthermore, the cohort consisted exclusively of students who were learning ASL as a second language.

In addition to the day program, NU offers an evening program through the College of Professional Studies. The course requirements between the day and evening program are identical. However, classes in the evening meet once a week for a total of 2.5 hours, whereas the day program classes meet twice a week for a total of 6 hours. Also, students in the evening program are on a quarter-based system and thus meet less frequently than the students in the day program, which are on a semester-based calendar. Evening program students typically are of a nontraditional age and work full time. Often, students in the evening program already hold college degrees and are pursuing a certificate in ASL/English interpreting. As with the day program, all students in the evening program who participated in this study are learning ASL as a second language.

5.1. GTC activities and logs

In each of the four interpreting skills courses, students are required to undertake self-directed learning activities, which are GTC requirements that reinforce the working of classroom language instruction and interpreting skills development in both ASL and English. Historically, these activities have been entirely self selected and initiated. Students are provided with written guidance on activities to consider (but none were required) and a GTC log form to track their activities and time on task. Students select those activities that interest them, execute the

activities, and record their work on the log sheet. Examples of English language skills included reading *Time* magazine and doing the *New York Times* crossword puzzle.

The GTC requirement focuses on the following four areas: (a) English Language Development, (b) ASL Development, (c) ASL-to English Interpreting Skills, and (d) English-to-ASL Interpreting Skills. Although the activities might be beneficial for skill growth, no baseline skills were established nor documented, and no objectives or goals were established for measuring growth or success. The log form required only that the students record activities undertaken and time spent. There was no stated expectation of time on task.

Prior to this study, feedback was provided to students via written margin notes on activities that seemed promising. No face-to-face meetings between the instructor and students regarding GTC activities took place. Grading was basically pass/fail and was based on a subjective assessment of the quantity of work undertaken. Assessment was difficult because of the idiosyncratic nature of the work and the subjectivity/variability that is necessarily introduced when asking students to self-determine their individual growth.

In this study, we sought to determine whether aspects of deliberate practice—specifically, guided activities based on performance goals; face-to-face feedback (using a coaching-type model) on a regular basis; engagement in structured self-assessment; and a commitment to a minimum time-on-task expectation—would make the GTC activities more effective learning opportunities for students. Further, we also examined whether there was a relationship between a student's mindset and his or her approach to the GTC activities.

Given the demands expected of students upon completion of their interpreter education programs and entry into the field, GTC activities can be a stepping stone to expertise. Within academic programs, students can augment their classroom learning with self-directed activities that are tailored to their learning goals. Furthermore, learning how to identify these goals, select appropriate activities, receive individualized assessment feedback, and undertake self-assessment are key skills for ongoing professional development.

5.2. Research design

During spring 2008, six students in the day program and three students in the evening program taking the Interpreting Narrative Texts course (second course in the sequence) participated in this research study. Each student completed a "pre-research" questionnaire. I used this instrument to measure satisfaction and experience with the previous course requirement(Interpreting Inquiry Texts) for GTC logs.

In the pre-research questionnaire, I asked students to self-report their perceptions of skills growth in each category. Furthermore, I asked how much time they spent on each area of activity, the extent of faculty involvement surrounding growth-related activities, and a specific set of questions related to mindset.

I then asked students to identify specific goals for each of four skills development areas. The goals were finalized in individualized face-to-face meetings with the course instructor lasting approximately 20 minutes. On the basis of the goals, the instructor and student chose activities to be undertaken. Activities focused on the current skill set of the student and identified incremental steps that could be undertaken for improvement. So that I could measure growth over time, I encouraged students to incorporate measures such as frequent comparisons of their videotaped work or the use of monitor logs to document frequency of errors over time. Also, I asked each student to specify, in advance, an amount of time that would be dedicated daily for these activities.

Students were free to identify activities that they wished to undertake in order to accomplish their personal growth goals; however, the activities had to be approved by the instructor. For example, many students identified improved fingerspelling comprehension as an ASL language development goal. One activity involved practicing receptive fingerspelling via an online site. A record of successful comprehension was maintained. This documentation helped to gauge improvement over time. Once comfort was established with this drill activity, students then reviewed ASL narrative texts that contain embedded fingerspelling to practice comprehension in an actual text. With the premise of incorporating tasks that are just outside the current abilities of students, as described in deliberate practice, growth log activities could then be altered to incorporate ASL narratives, scaffolding the improving skills onto slightly more challenging material.

Once the goals and activities were agreed upon, students worked independently and submitted a formal GTC log along with supporting materials at pre-arranged meetings throughout the term. For the day students, four meetings were held throughout the semester, given the greater frequency of class sessions. For the evening

students, three meetings occurred during the term because the evening program is on a quarter schedule and has fewer sessions.

During these meetings, students would review the work undertaken, highlight specific activities by reviewing videotaped work with the instructor and/or supplying copies of prepared written materials (e.g., paraphrases of English source texts). They would identify activities that were helpful and thus should be continued as well as those that were not helpful and thus should be discontinued. In that event, substitute activities were identified jointly. Students were asked to leave all supplemental materials (e.g., videotaped interpretations) with the instructor for review. This would enable the instructor to provide students with more detailed feedback, thus augmenting the students' self-assessments.

When I conducted the project as an adjunct teaching staff member, meetings with students were planned during class time. This was less of an issue for the day program classes given the luxury of having 6 hours of class time each week as compared with the evening program (2.5 hours per week). The demands of the curriculum do require maximum class time, yet the benefits of implementing deliberate practice may, in the long run, outweigh the temptation to engage in "covering" as much material as possible.

Wiggins and McTighe (2005) described an approach to instructional design that challenges the traditional approach of "coverage." *Coverage* is defined as "an approach in which students march through a textbook, page by page (or teachers through lecture notes) in a valiant attempt to traverse all the factual material within a prescribed time" (Wiggins & McTigue, 2005, p. 16). Using an approach commonly known as *backwards design,* instructors facilitate learning by first establishing desired results, then ascertaining assessment evidence, and only then designing learning activities. This approach calibrates quite well with the principles and approach of deliberate practice.

Customizing learning through backwards design and deliberate practice may be challenging but worthwhile. The current approach of educating interpreting students produces significant numbers of graduates who are unprepared to meet the minimum standards of the field. Facilitating learning may require a reexamination of the structure of class time and reliance on adjunct faculty, who are only available for finite classroom periods.

At the conclusion of the term, all students—day and evening—completed a postresearch survey to measure their experience with this deliberate practice approach to GTC log requirements. The questions ask for a self-assessment of skills improvement. As mentioned earlier, Kruger and Dunning (1999) warned of the misperceptions—particularly, overestimation—of unskilled practitioners engaged in self-assessment without prerequisite metacognitive awareness. Through faculty-led feedback sessions, students were taught to look at specific aspects of their performance that were successful or lacking. If certain aspects were lacking, then improvement in these aspects was highlighted in subsequent GTC activities log submitted at each feedback meeting.

6. Results

A comparison between the pre- and postsurveys in each cohort follows. A summary of the data reveal that implementing deliberate practice through established self-directed study goals, activities, and coaching resulted in almost universal self-assessed improvement in language and interpreting skills. With deliberate practice, students reported maintaining or increasing time-on-task for GTC log activities. Results on the mindset questions were mixed. The questions explored the perception of interpreting skills being innate (a fixed mindset) or the results of effort and practice (a growth mindset). Students responded favorably to structured meetings with faculty to discuss growth activities. Evening program students indicated full agreement with a growth mindset statement by the conclusion of the study, whereas some day program students continued to demonstrate a mixed view.

6.1. Survey comparison

Students completed a survey inquiring about their growth log experiences preceding the pilot and again at the conclusion of the pilot. Each question is listed with a summary comparing the results.

Question 1: How beneficial was the growth log requirement for improving your language and/or interpreting skills?

Day students: 100% reported "very" or "somewhat" beneficial results, an increase of 33%.

Evening students: 100% reported "very" or "somewhat" beneficial results, an increase of 100%.

Question 2: When thinking about your ASL skills, how much did they improve?

Day students: 100% reported "significant" or "some" improvement, an increase of 33%.

Evening students: 100% reported "some" or "limited" results, an improvement of 34%.

Question 3: When thinking about your English skills, how much did they improve?

Day students: 80% reported "significant" or "some" improvement, a decrease of 4%.

Evening students: 100% reported "some" or "limited" improvement, an increase of 50%.

Question 4: When thinking about your ASL-to-English interpreting skills, how much did they improve?

Day students: 100% reported "significant" or "some" improvement, an increase of 33%.

Evening students: 100% reported "significant" or "some" improvement, an increase of 33%.

Question 5: When thinking about your English-to-ASL interpreting skills, how much did they improve?

Day students: 100% reported "significant" or "some" improvement, an increase of 33%.

Evening students: 100% reported "some" improvement, an increase of 66%.

Question 6: How often did you meet with your professor to discuss your growth-to-competence log activities?

Day students: 100% met with faculty three or more times, an increase of 83%.

Evening students: 100% met with faculty three times, an increase of 100%.

Question 7: When you met with your professor to discuss Growth-to-Competence log activities, how helpful were these meetings?

Day students: 100% reported that meetings were "very helpful," an increase of 33%.

Evening students: 100% reported that meetings were "very" or "somewhat" helpful, an increase of 100%.

Question 8: How much time did you devote to Growth-to-Competence activities on a daily basis?

Day students: 100% reported spending 15 minutes or more on GTC activities on a daily basis, an increase of 33%.

Evening students: 50% reported spending 15 minutes or more on GTC activities on a daily basis, an increase of 50%.