Development of an Upper Limb Instructional Design to address Self-efficacy among self-assessed Novice and Intermediate Prosthetic Clinicians

Gerald Stark, MSEM, CPO/L, FAAOP
Ottobock, Austin, Texas

INTRODUCTION
The intent of this instructional design proposal is to increase personal clinical self-efficacy and competence with upper limb prosthetic fitting in order to improve the overall acceptance rate of upper limb prostheses among patients. More specifically, the educational goal is to decrease the skill gap and level of dissonance that seems to be broadening between the dichotomous Expert-Specialist (E-S) and the Novice-Intermediate (N-I) groups. In a recent on-line survey of 151 practitioners, 71.8% self-identified themselves as in the N-I group, while 26.2% identified themselves as part of the E-S group. The ultimate impact of this instructional design would be to increase the level of upper limb prosthetic competency and care and could serve as a model for other high tech components.

METHOD
After the telephone interviews and on-line survey an additional Relevant Characteristics of the Learner that drove the comparison of the Expert-Specialist (E-S) group could be compared to the Novice-Intermediate (N-I) Group with respect to the greater number of extrinsic professional linkages, attitudes toward innovation, and characteristics both groups felt contributed to becoming a specialist. These characteristics included Patient Experience, Interaction with and Expert, Familiarity with Component Design, Socket Design, Ability to Adjust the Prosthesis, and Dealing with Variation in the patient population. The instructional design process was engaged and the performance objectives were further refined to three main performance objectives. Differences between private and institutional settings revealed a major difference in the number of extrinsic professional linkages. Although the comparison of the data was limited in that it was not subjected to a t-test for distribution and formal correlation measures, it did seem to indicate that there was a higher degree of extrinsic social interaction, greater confidence, and a higher tolerance of innovative risk.

PERFORMANCE OBJECTIVES & JOB TASKS
The three main performance objectives identifies were 1) Increasing Extrinsic Heterophilic Linkages, 2) Providing more Access to Contextual Clinical Experts, and 3) Development of Self-Directed Educational Materials. Provide additional scaffolding to increase the level of practitioner confidence. The Job Tasks in Upper Limb Prosthetics were described to a greater degree with a value rubric in the Identification, Process and Function, and Clinical Practice of Evaluation, Impression Taking, Modification, Initial Fitting, Componentry Recommendation, Adjustment, and Final Delivery and Follow-up. The ability to outline these tasks would allow the construction of a self-efficacy measure similar to those proposed for nursing and anatomy students. The sequencing has become more detailed from the initial step-by-step procedure to a more appropriate “Part to Whole” and “Known-to-Unknown” sequencing where the learner will be able to successfully break down the issues surrounding upper limb fitting as well address some of their individual self-perceived inadequacy regarding upper limb fitting.

PERFORMANCE MEASURES & STRATEGIES
The first measure would be the number and quality of extrinsic heterophilic linkages since they appeared to be lower among the N-I group in the private clinics and much higher in the E-S group in the Institutional/Corporate setting. The number of extrinsic linkages should be increased to from the 1.75 linkages seen as an average of novices and intermediates to approximately 3.5 on average. The macro-institutional strategy would use access to the Internet to make a variety of information available in various settings, regions, and professional levels. Since prosthetic offices are often distributed over a wide range of regions, the strategy should have a national scope of delivery. Also it is important to create linkages that are cross regional to enhance the degree of cosmopilite and cross-cultural exchange. The micro-institutional strategy would consist of the development of three different components that would each emphasize access for personal references, social/professional linkages, and expert interaction. They would involve the creation of a number of upper limb learning modules that address the different levels of amputation.

INSTRUCTIONAL SEQUENCING
The instructional sequencing would be Initial Clinical Assessment, Introduction to Learning Materials, Completion of Targeted Reference Material, Discussion Board, Virtual Clinic Conference, and Final Assessment among groups of 5-7. Clinical independence will be fostered at the context of the learner with reference materials, on-line instruction, personal expert interaction, and simulated group clinical education.

REFERENCES
Stark, G. Upper Limb Self Assess Comp, 2013

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