



## Learning Styles in Plastic Surgery: A Pilot Study

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### Abstract

A learning style is a student's consistent way of responding to and using stimuli in the context of learning. Stewart and Felicetti (1992) define learning styles as those 'educational conditions under which a student is most likely to learn'. Thus, learning styles are not really concerned with 'what' learners learn, but rather 'how' they prefer to learn. Research has been conducted comparing and contrasting surgical versus medical specialties and within surgery itself too. Within plastic surgery very little research exists regarding learning styles such as how trainees learn, what methods exist to facilitate learning and what are the most successful methods for trainees to learn. Use of a learning inventory can identify an individual's learning styles and through its analysis an individual can be classified according to the knowledge, skills and attitudes a trainee possesses. As a result, individuals often prefer and perform better in activities which embellish these traits and hence lead to better performance. The first author conducted a survey of a single plastic surgery unit, where various surgeons of varying levels of experience completed learning styles inventories. Interestingly, of the 13 surgeons who replied, 12 had the same overriding learning style. This small and somewhat limited pilot study shows that plastic surgery trainees and consultants perform similarly in the tasks relating to concrete experience, reflective observation, abstract conceptualisation and active experimentation, which overall classifies their overall learning styles in this particular unit as having a hands-on approach i.e. 'doers' and activists. If this study was conducted to include a larger sample size, this could lead to some potentially interesting results which could have far-reaching implications for training, selection into the specialty and surgical skills.

### Introduction

"The education of a doctor which goes on after his degree is, after all, the most important part of his education".

1. Inspiration is the platform for many medical students and postgraduates to embark on a career in a surgical specialty.
2. Therefore, the methods used in order to inspire these individuals should be well developed, evidence-based and promote lifelong learning. Studies have shown that career choices are made a result of preconceived ideas and positive experience and exposure to a specialty, including mentorship, acknowledgment and positive contribution as well as learning from that experience [3-12].

A learning style is a student's consistent way of responding to and using stimuli in the context of learning. Stewart and Felicetti (1992) define learning styles as those 'educational conditions under which a student is most likely to learn' [13]. Thus, learning styles are not really concerned with 'what' learners learn, but rather 'how' they prefer to learn. Research has been conducted comparing and contrasting surgical versus medical specialties and within surgery itself too. Within plastic surgery very little research exists regarding learning styles such as how trainees learn, what methods exist to facilitate learning and what are the most successful methods for trainees to learn. Using a learning styles inventory (LSI) can identify an individual's learning styles and through its analysis an individual can be classified according to the knowledge, skills and attitudes a trainee possesses. [14-18] As a result, educational activities and training could be tailored to that individuals needs or preferences and which would in turn embellish such traits and thereby encourage and promote better performance [17,18].

### Background

A study by Barrick and Mount (1991) looked into factors affecting job performance. In this large study they analysed 117 studies utilising 162 samples with 23,994 participants [19]. They

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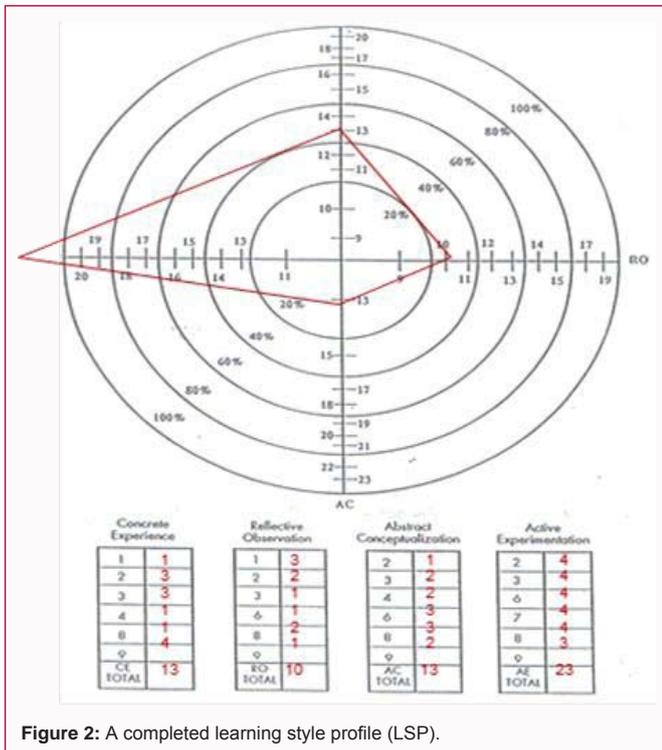


Figure 2: A completed learning style profile (LSP).

second, 2 marks for the third and 1 for the statement you identify with least.

### Results

Of the 25 individuals who were given the LSI, 13 replied, a response rate of 52%. The results were analysed and mean learning style, derived from the scores of each individual was determined on that basis. Mean scores for each of the four components of the LSI were plotted on the Learning Style Profile (LSP). The poor response rate could be attributed to the timing of study, where a large proportion of staff was absent due to school holidays and study leave (Figure 3 and 4).

### Discussion

The results of the small and somewhat limited pilot study are interesting and could have far-ranging implications for surgical education, surgical training and plastic surgery curricula. The mean results showed higher scores on active experimentation (AE), then abstract conceptualisation (AC) and concrete experience (CE) and then finally, lower scores in reflective observation (RO). It would have been interesting to have gathered more results and compared SHOs to registrars to consultant, to see if a learning style is broad initially in early surgical training and whether it becomes for fixed later on in one's surgical career, or vice versa. This was not helped by the sample size of individuals who completed the LSI. Another factor which may have affected the ultimate endpoint with respect to the sample size is that this is an 'unsexy' subject, but a very important one—which could affect the future of plastic surgery as a surgical specialty, particularly but not exclusively in the UK [20-21].

On closer examination of the results, the mean results overall showed that the individuals scored higher on active experimentation (AE) which is a domain focused on being an activist and pragmatist. Learning styles overlap, and therefore, it not unusual to see one over-riding learning style, with reasonable scores along the axes of

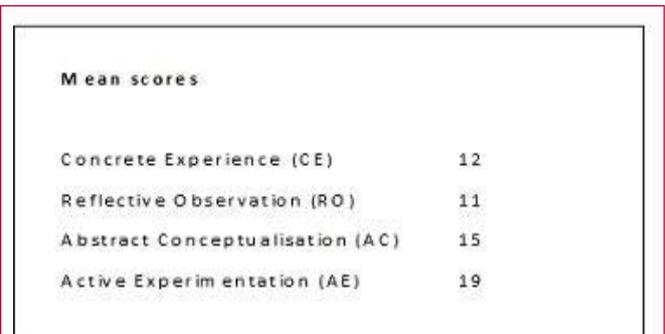


Figure 3: Mean scores for each component of the LSI.

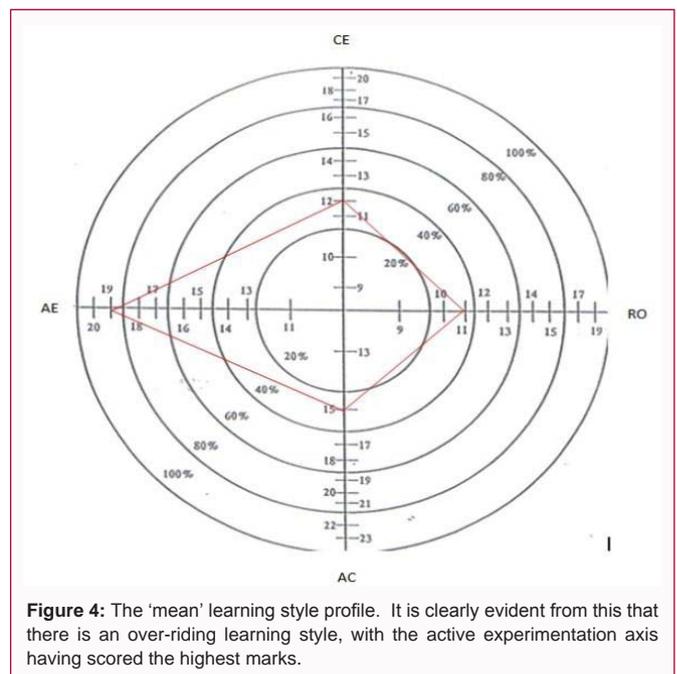


Figure 4: The 'mean' learning style profile. It is clearly evident from this that there is an over-riding learning style, with the active experimentation axis having scored the highest marks.

the other learning style domains. AE comprises characteristics such as being flexible, open-minded, being optimistic, unlikely to resist change, being pragmatic, eager to test things out in practice, being task focused and technique-oriented. In terms of negative traits, individuals who are active experimentists tend to rush things, or take action before thinking, take on too much, risk-taking, downplaying theory and basic principles and rejecting things without obvious application. Now these are some characteristics which generally reflect each this particular learning style, evidenced by some of the positive and negative traits of this particular learning style.

The next learning style plastic surgeons and their trainees scored highly on was that of abstract conceptualisation (AC). This particular learning style combines being a pragmatist as well as theorist, which was prevalent in the previous learning style of AE. As well as sharing some of the traits of A, namely the pragmatism element, this style is heavily embedded in theory. Its traits include being logical and rational, remaining objective and disciplined and asking probing questions. The weaknesses of this learning style include a low tolerance for uncertainty disorder and ambiguity, and restriction to lateral thinking or being subjective. Once again this is almost a 'surgical approach' to clinical and non-clinical problems and therefore, unsurprisingly, as well as scoring highly on AE, the group scored highly on AC.

The remaining two learning styles, concrete experience (CE) and reflective observation (RO) scored, but modestly but not as highly as the previous two learning style domains. With respect to RO, it comprises elements of being a theorist as well as a reflector. These include a careful, methodical approach, good listening and assimilation of information. The weaknesses however, include being too cautious, being risk averse and unassertiveness. CE has elements of being an activist and a reflector.

The implications of a larger version of this study are as far ranging as undergraduate training, postgraduate training, and recruitment into plastic surgery, FRCS (plast) examination and preparation, teaching on courses, service provision and on the job learning as well as clinical governance. Currently, this study is being performed in multiple units around the UK, and it is hoped that a definite learning style could be delineated amongst plastic surgeons and their trainees. Further work could compare junior trainees to registrars to consultants, to identify factors which could affect the development of a particular learning style. Moreover, units from around Europe and around the world could be compared to see how best other learn and train. It may be that as surgeons in the UK we should look at the practice and learning of our colleagues elsewhere to see if too can gain from their educational learning programmers. Other work currently is focusing on comparing inter-surgical specialties, including Otolaryngology to Trauma and Orthopedics to General Surgery, and indeed comparing medical disciplines, medicine, to anaesthesia to psychiatry.

It is hoped through this further work, we will be able to add to clinical education and thereby promote new studying skills and higher learning which provide surgical trainees with the techniques to learn and practice safely and hopefully fulfill their true potential.

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