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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 1a: A Learning Style Inventory.
Look at the statements and decide how closely they refer to you. Give 4 marks to the statement with which you identify the most, 3 marks for the second, 2 marks for the third and 1 for the statement you identify with least.

		CE		RO		AC		AE
1	I like to get involved		I like to take my time before acting		I am particular about what I like		I like things to be useful	
2	I am open to new experiences		I like to look at all sides of the issues		I like to analyse things and break them down into their parts		I like to try things out	
3	I like to follow my feelings		I like to watch		I like to think about things		I like to be doing things	
4	I accept people and situations the way they are		I like to be aware of what is around me		I like to evaluate		I like to take risks	
5	I have gut feelings and hunches		I have lots of questions		I am logical		I am hard working and get things done	
6	I like concrete things I can see, feel or smell		I like observe		I like ideas and theories		I like to active	
7	I prefer learning in the here and now		I like to consider things and reflect about hem		I tend to think about the future		I like to see results from my work	
8	I rely on my feelings		I rely on my own observations		I rely on my own ideas		I have to try out things myself	
9	I am energetic and enthusiastic		I am quiet and reserved		I tend to reason things out		I am responsible about things	

Figure 1B: A Completed learning style inventory (LSI).
Concrete Experience (CE) 13 Reflective Observation (RO) 10
Abstract Conceptualisation (AC) 13 Active Experimentation (AE) 23

		CE		RO		AC		AE
1	I like to get involved	1	I like to take my time before acting	3	I am particular about what I like	4	I like things to be useful	2
2	I am open to new experiences	3	I like to look at all sides of the issues	2	I like to analyse things and break them down into their parts	1	I like to try things out	4
3	I like to follow my feelings	3	I like to watch	1	I like to think about things	2	I like to be doing things	4
4	I accept people and situations the way they are	1	I like to be aware of what is around me	4	I like to evaluate	2	I like to take risks	3
5	I have gut feelings and hunches	3	I have lots of questions	1	I am logical	2	I am hard working and get things done	4
6	I like concrete things I can see, feel or smell	2	I like observe	1	I like ideas and theories	3	I like to active	4
7	I prefer learning in the here and now	3	I like to consider things and reflect about hem	1	I tend to think about the future	2	I like to see results from my work	4
8	I rely on my feelings	1	I rely on my own observations	2	I rely on my own ideas	3	I have to try out things myself	4
9	I am energetic and enthusiastic	4	I am quiet and reserved	1	I tend to reason things out	2	I am responsible about things	3
TOTALS		**13**		**10**		**13**		**23**

found that conscientiousness showed consistent relations with all positive performance criteria for all occupational groups. Further, extraversion was a valid predictor for occupations involving social interaction such as management and sales. Furthermore, extraversion and openness to experience were valid predictors of training proficiency criteria. Therefore, one can extrapolate these interesting findings into medicine, concentrating particularly in surgical training and education. Plastic surgeons and trainees in the specialty share many qualities and characteristics. Generally speaking, they are regarded as creative, innovative, always thinking of new ideas, approaches and techniques, continually challenging the boundaries of surgery. They are regarded hard-working, dedicated, and as a result are competitive and high achievers. They are deemed to have sound clinical knowledge and surgical expertise. If a learning style which suits these individuals can be identified perhaps their learning and their subsequent training could be optimised? The author became familiar with the concept of learning styles during his part-time MSc studies in Clinical Education, Peninsula Postgraduate Health Institute, University of Exeter. Through his study he realised the potential application to his daily practice as a trainee in plastic and reconstructive surgery as well as methods of learning (including operating and training time). This therefore was the inspiration and catalyst to undertake this project.

Methods and Study Design

A learning styles inventory (LSI) form was circulated to Consultant plastic surgeons, registrars and staff grades and ST/SHO/F2 grades in a single plastic surgery unit. Out of a total of 25 individuals, 13 of the replied, and completed a LSI. After obtaining their permission, the first author discussed with those individuals as to how to fill in the LSI correctly, together with a brief précis of the study. Of the 13 LSIs, 13 were completed and collected, and the data was analysed and interpreted accordingly. Each of their learning style inventories were examined and their individual learning styles determined, by plotting scores on the axes of the Learning Style Profile (LSP), and thereby determining the learning style of that individual, and by determining the mean, an overall learning style representative of the unit, albeit with a 52% response rate (Figures 1a, 1b and 2). Look at the statements and decide how closely they refer to you. Give 4 marks to the statement with which you identify the most, 3 marks for the

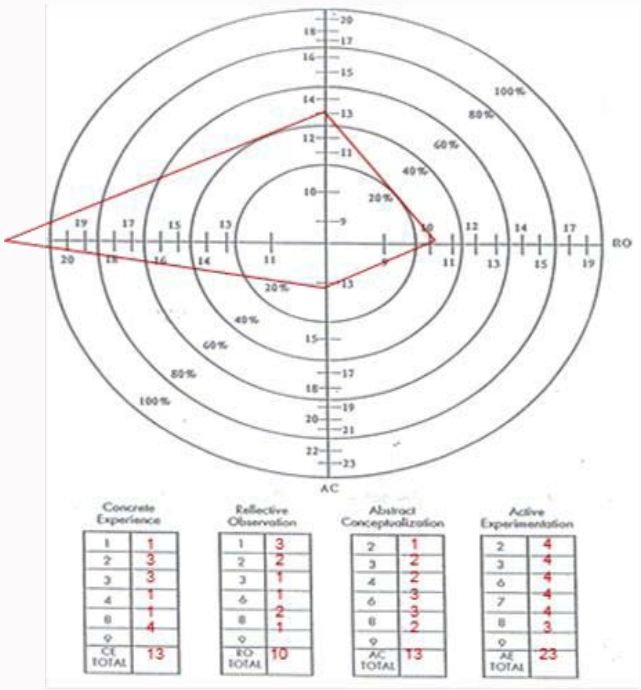

Figure 2: A completed learning style profile (LSP).

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–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

Mean scores	
Concrete Experience (CE)	12
Reflective Observation (RO)	11
Abstract Conceptualisation (AC)	15
Active Experimentation (AE)	19

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

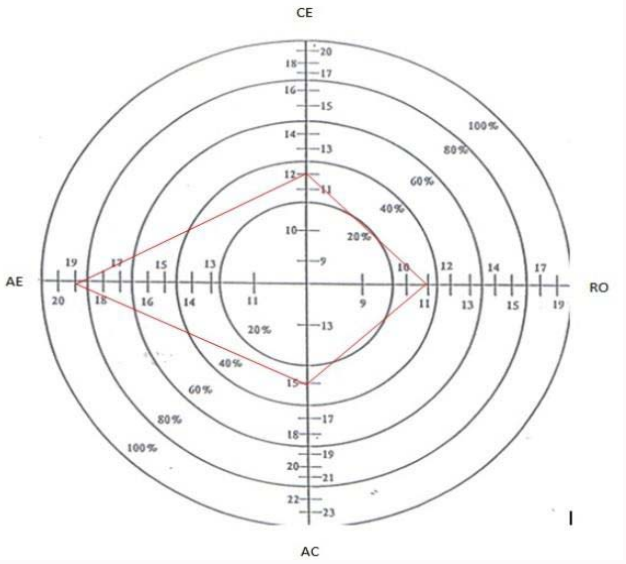

Figure 4: The 'mean' learning style profile. It is clearly evident from this that there is an over-riding learning style, with the active experimentation axis having scored the highest marks.

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.

References

1. John Shaw Billings, 1838-1913.
2. Rees-Lee JE, O'Donoghue JM. Inspirational surgical education: the way to a mature specialist identity.J Plast Reconstr Aesthet Surg. 2009;62(5):564-7.
3. Stewart, KL, Felicetti LA. Learning styles of marketing majors. Educational Research Quarterly. 1992;15(2):15-23.
4. Newble DI, Entwistle NJ. Learning styles and approaches: implications for medical education. Med Educ. 1986;20(3):162-75.
5. Honey P, Mumford A. Manual of Learning Styles, London: P Honey. 1982.
6. Learning Style Inventory.
7. Clark D. Kolb's Learning Style Inventory.
8. Merrill D. Instructional strategies and learning styles: which takes precedence? In: Robert Reiser and Jack Dempsey (Eds.) Trends and issues in instructional technology. Prentice Hall. 2000.
9. Barrick MR, Mount MK. The Big Five personality dimensions and job performance: A meta-analysis. Personnel Psychology. 1991;44:1-26.
10. Rees-Lee JE, Lee S. Reaching our successors: the trend for early specialisation and the potential effect on recruitment to our specialty. J Plast Reconstr Aesthet Surg. 2008;61(10):1135-8.
11. Al-Nuaimi Y, McGrouther G, Bayat A. Modernizing medical careers in the UK and plastic surgery as a possible career choice: undergraduate opinions. J Plast Reconstr Aesthet Surg. 2006;59(12):1472-4.
12. Khan MS, Bann SD, Darzi AW, Butler PE. Assessing surgical skill using bench station models. Plast Reconstr Surg. 2007;120(3):793-800.
13. Andriole DA, Klingensmith ME, Jeffe DB. Who are our future surgeons? Characteristics of medical school graduates planning surgical careers: analysis of the 1997 to 2004 Association of American Medical Colleges' Graduation Questionnaire National Database. J Am Coll Surg. 2006;203(2):177-85.
14. Newton DA, Grayson MS. Trends in career choice by US medical school graduates. JAMA. 2003;290(9):1179-82.
15. Chen H, Hardacre JM, Martin C, Lillemoe KD. Do medical school surgical rotations influence subspecialty choice? J Surg Res. 2001;15;97(2):172-8.