

Introducing Critical Thinking to Dental Undergraduates

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Objective: To evaluate if a Visual Thinking Strategy (VTS) program would enhance critical thinking of first year dental undergraduates

Background

Visual Thinking Strategies (VTS) is the connection between visual perception and thought, 'visual thinking'. It is a teaching and learning strategy using visual art to increase critical thinking (Arnheim, '72). It has been widely used in education but more recently introduced into medical education in the US and UK (Naghshineh et al, 2008). VTS aims to develop critical thinking through enhanced observation and reasoning skills, based on observational fact, using multiple perspectives gained from group sessions (Housen, 2002). Observational skill development is a critical component of the patient history and oral examination performed by the dentist (Giddens, 2007).

In 2012, the Cork University Dental School and Hospital introduced VTS into the first year undergraduate dental program to help students prepare for clinical practice. Dental students are responsible for patient treatment in the 3rd, 4th and 5th years of the BDS program; therefore is important that students are able to assess patient signs and symptoms, conduct an oral examination, interpret clinical findings and formulate a treatment plan under the supervision of a clinical instructor.

Method

Dental undergraduates, (N=91), participated in a VTS program as part of the Behavioural Sciences module. Pre selected art works were utilized as subjects for interpretation and group discussion. The art was selected based on specific criteria; it had a strong narrative with familiar elements accessible to all levels of esthetic development and cultural sensitivities, and had ambiguity that would encourage further observation and discussion. The art was sequenced to increase challenge. Clinical images and radiographs are deemed inappropriate, as the students would be primed to see only what they think they must see, rather than explore and support findings on evidence within the image.

Prior to the VTS program students were shown an image, Fig 1, and given 10 mins to respond in writing to 3 open ended questions,(Pre VTS responses). After the program the students were asked to repeat the exercise on image 1 (Post VTS responses).

The pre and post VTS responses were evaluated for 7 attributes: word count, simple observations, detailed observations, observations supported in the image, observations outside the image, speculations and multiple possibilities.

The VTS program consisted of 3 sessions; two sessions were held in a lecture theatre and the third at The Crawford Art Gallery, Cork. During each session three/four art works were discussed in groups of approx.10 students using the same open ended questions. A trained facilitator reframed and reflected the student responses back to the group, reiterating evidence observed in the image.

In addition, a content analysis was conducted on student's written feedback of their VTS experience.



Fig.1

- What is going on in this picture?
- What do you see that makes you say that?
- What more can you find?

Results

Average number per student	Pre VTS	Post VTS
Word count	118.76	161.22
Simple observations	26.7	32.47
Detailed observations	11.18	16.70
Support observations in the image	2.21	3.87
Support observations outside image	0.09	0.21
Speculation	2.08	3.59
Multiple possibilities	0.39	0.65

Table 1

Table 1 shows the scores for the 7 attributes measured pre and post VTS. All of the scores increased. The students made more observations and described more detail, as well as supporting those observations within the image after completing the VTS program, exhibiting an enhanced level of critical thinking.

A content analysis identified changes in student attitudes, values and self awareness. Recurring themes expressed were that they learned to value the different perspectives of others, it improved their observational and communication skills, they realised the importance of small details and not jumping to conclusions. Many said the program would make them look at the whole patient and understand him/her better. Some reported an increased interest in art which may indicate a degree of esthetic development.

Discussion

VTS provides a visual foundation for making a diagnosis. Examples can be seen in Fig 2. Acute observations, interpretation based on those observations and increased communication skills are all essential for the delivery of high quality health care. The results of the pilot program show an enhancement in critical thinking in first year dental students.

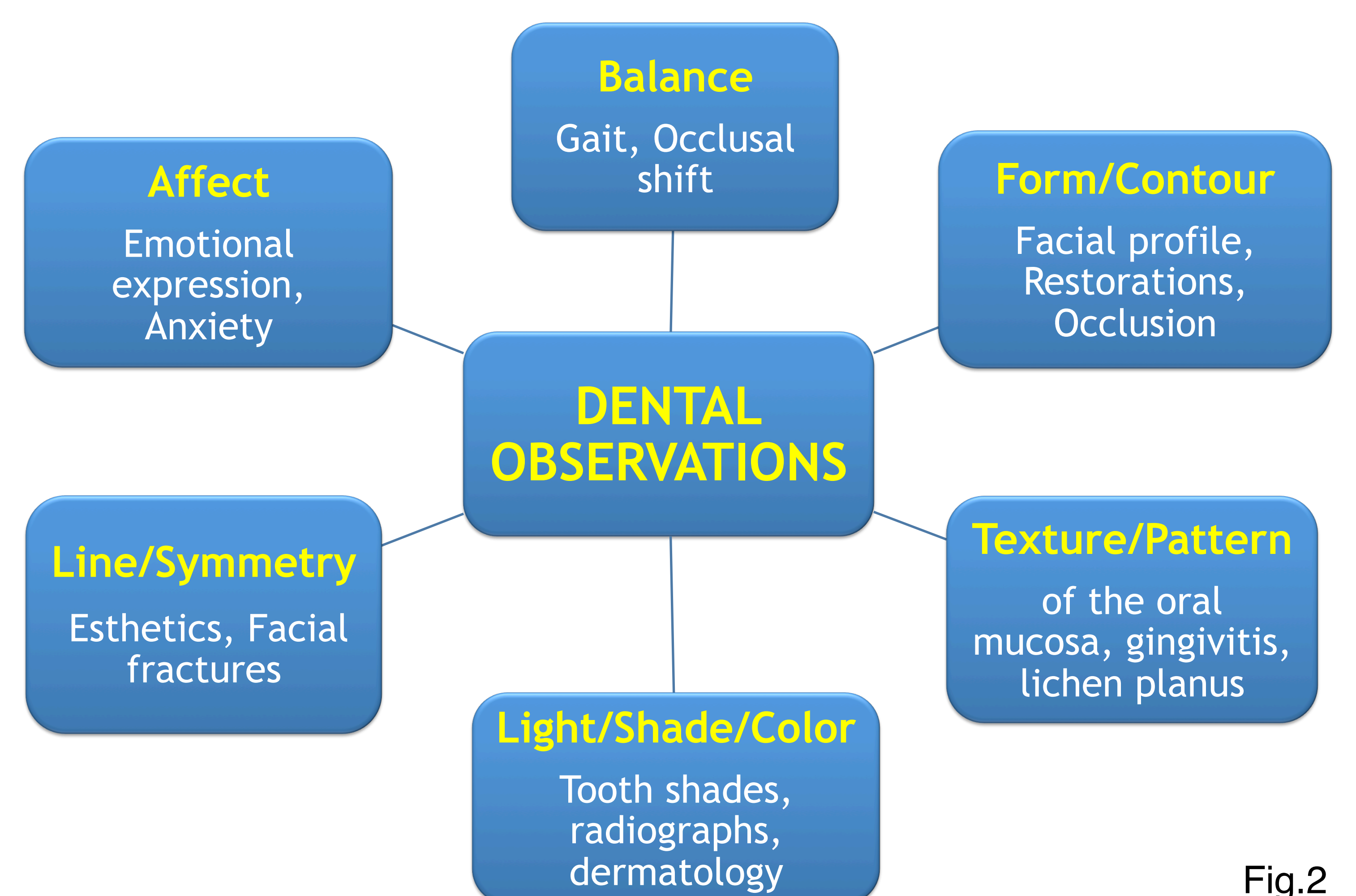


Fig.2

Conclusions

The results of the qualitative and quantitative assessment of this VTS program indicates that this is a valuable method of enhancing critical thinking in dental undergraduates. Further studies should examine if the participants transfer these skills to their clinical practice as they progress through the dental undergraduate program.

