

Online Research @ Cardiff

This is an Open Access document downloaded from ORCA, Cardiff University's institutional repository: <http://orca.cf.ac.uk/117249/>

This is the author's version of a work that was submitted to / accepted for publication.

Citation for final published version:

Chuenjitwongsa, S., Bullock, Alison and Oliver, R. G. 2018. Culture and its influences on dental education. *European Journal of Dental Education* 22 (1) , pp. 57-66. 10.1111/eje.12244 file

Publishers page: <http://dx.doi.org/10.1111/eje.12244> <<http://dx.doi.org/10.1111/eje.12244>>

Please note:

Changes made as a result of publishing processes such as copy-editing, formatting and page numbers may not be reflected in this version. For the definitive version of this publication, please refer to the published source. You are advised to consult the publisher's version if you wish to cite this paper.

This version is being made available in accordance with publisher policies. See <http://orca.cf.ac.uk/policies.html> for usage policies. Copyright and moral rights for publications made available in ORCA are retained by the copyright holders.



Abstract

Introduction

Culture is an important factor influencing how students develop learning and how educators provide support to students. The aim of this paper is to explore a concept of national European cultures, and a relationship between culture and educational practice with the intention of helping the dental profession gain a better understanding of effective teaching and learning in dentistry.

Content

Culture represents the collective behaviours, values, and beliefs of people in a society. How people react to education is partly explained by culture. Students utilise different culturally-based strategies to develop learning. We apply Hofstede's model to explore European cultures and implications for dental education and educational practice. Most Western students possess assimilating learning styles enabling them to learn effectively in student-centred contexts while most Eastern students have accommodating learning styles and are more familiar with teacher-centred learning. Eastern students may need to adapt their approach to learning to better benefit from student-centred learning.

Conclusion

Culture influences students' learning and educational practice. Dental educators should be aware of such influences and provide support that acknowledges students' different cultural backgrounds. Cultural competence is fundamental for effective teaching and learning in dentistry.

Introduction

Teaching and learning in dentistry is complex and involves many aspects including interactions between students and educators, curriculum, institution context, and influences from outside the educational environment (1). In order to facilitate good learning experiences, educators need to be aware of these factors and understand their influences on dental education. A factor which significantly influences education is culture (2) which plays an important role in shaping not only student learning but also teaching strategies (3).

There is a growth of multiculturalism in many parts of the globe. Within the European Union (EU), for instance, the free movement policy has allowed European citizens to migrate across Europe. This situation encourages cultural exchange and integration, which has changed Europe to be one of the most complex multicultural areas in the world. Erasmus is an example of a programme supporting the free movement of students across Europe (4). Under this programme, students wishing to study away from their home institution will need their home and intended host university to have a valid Erasmus University Charter and agreement between these universities to accept students on exchange. This allows the student to understand a different culture but also an ability to ease their integration into a different society.

Additionally, in the UK for example, although the total number of students in higher education has decreased gradually since 2010, the number of international students has increased (5). Thus multiculturalism in higher education is growing in complexity and educators need to be aware of students' cultural backgrounds and how this may impact on learning.

Culture operates at the broad, national level (representing the behavioural patterns of a large group of people) and at the level of sub-cultures (representing specific groups of people or contexts). Both national and sub-cultures could influence how

people learn (6, 7). However, there is a scarcity of the evidence on how sub-cultures, such as found within institutions or classrooms, influence teaching and learning. Additionally, some sub-cultures may not reflect the general, national cultural patterns of the whole population (7). In this article we focus on the concept of national culture and discuss how it might influence educational practice and raise implications for dental educators.

What is Culture?

Writers describe 'culture' from different perspectives. Hofstede et al. (7) define it as "*the collective programming of the mind that distinguishes the member of one group or category of people from another*". At a broader level, culture covers a number of areas, including arts, crafts, education, language, customs and institutions (8, 9). At a more specific level, culture is the way of thinking, the behaviours and values which are shared among groups (10-12). It is a set of behaviours that allow individuals to understand the world (13), or possibly a set of values which govern individuals and the world around them (14). Culture can explain the way people react to education, especially teaching and learning (2). Consequently, it pays to be aware of the influences of culture on people's learning behaviours, as well as educational beliefs and values.

In order to understand how culture relates to group behaviours, several cultural models have been proposed. There is still no 'best' model that can perfectly explain human cultures and their influences on education. For example, Parrish and Linder-VanBerschot (3) included a cultural dimension in their learning framework. The model outlines cultures relating to teachers' instructions and students' learning behaviours. However, this model was not developed from empirical research. The validity and applicability of the model is not yet defensible. Similarly, Kawar (9) proposes a model of culture primarily focussed on business and management roles;

Culture and its influences on dental education

the model gives a broad idea about international business culture. However, it is not entirely applicable in educational contexts.

One cultural model which is widely used and referenced is Hofstede's cultural dimension model (2, 7, 15). The model describes beliefs, values, and behaviours of people within different contexts (including European contexts). This paper takes Hofstede's cultural dimension model and explores how it influences teaching and learning in European undergraduate dental education.

Hofstede's Cultural Dimension Model

In this model, culture is categorised into six dimensions: Hierarchy, Identity, Gender, Truth, Virtue, and Happiness (Table 1). Each dimension comprises two divergent poles representing two set of behaviours, values, and beliefs.

[Table 1]

The first four dimensions were developed from a questionnaire study of 88,000 people working in 66 countries in the 1960s (7). Over decades the study has extended to 74 countries and expanded to include a further two dimensions.

Despite its popularity, the Hofstede model has been subject to intense debate on its quality and applicability. For instance, Javidan et al (16) argued that the model is too simplistic to explain human behaviours. Another limitation relates to information technology (IT) which is not considered in the model despite it impacting significantly on modern human societies and dental education in particular (17, 18). In terms of methodological rigour, Blodgett, Bakir and Rose (19) comment that the Hofstede study contains a lack of face validity, construct validity, and reliability, and argue that it is not valid at the individual level of analysis. It is important to acknowledge that the

Culture and its influences on dental education

Hofstede model only demonstrates general trends and characteristics and does not reflect variations within the culture (sub-cultures) (20).

Nevertheless, this model has great utility in cross-cultural research (21). Although the Hofstede model possesses certain limitations, it provides valuable insights regarding national cultures (22) and provide a framework for discussing the potential influence of culture on European dental education.

European Cultures

Based on the Hofstede model, general characteristics of people in each dimension are described along with a score for each country across the world (2, 7). This paper primarily focuses on European culture and dental education; thus, only examples of educational characteristics of people in each dimension are represented along with the ranking of some European countries within the dimension (Tables 2 to 7). The ranking is used only to illustrate the relative comparison between European countries. The countries are categorised into four geographical areas – Northern (N), Southern (S), Eastern (E), Western (W) Europe – based on a classification by the United Nations.

[Tables 2-7]

However, it is inappropriate to assume that all people within a nation share a similar culture; each nation contains a variety of sub-cultures and its cultures are influenced by many factors (20). It is important to emphasise that Hofstede's model only demonstrates trends and characteristics of people at a broader level and so does not reflect variations within cultures (e.g. sub-cultures) or entirely capture all area-specific cultural traits within Europe.

How Culture Influences Educational Practice

There is lack of literature exploring a relationship between European cultures and teaching and learning in dentistry. A number of research studies identified relationships between cultures and student learning styles, especially between Western (Anglo) and Eastern/South-Eastern Asian cultures (3, 23-28). However, there is still a lack of research evidence focusing on European culture and learning. One might argue that the studies on Anglo-Saxon and Asian cultures may not explain cultural differences towards learning within Europe.

Nevertheless, Northern and Western European countries share many features of Anglo-Saxon cultures (29, 30). Southern and Eastern Europe have cultural backgrounds primarily stemming from Greco-Roman Culture, Islamic culture and some of the Asian cultures (e.g. Confucius) (31, 32). It is possible to explain some cultural patterns in Southern and Eastern Europe based on Asian cultures. Hence, this paper focuses on a broader aspect of culture (Western and Eastern cultures) in order to reveal its potential influence on students' learning and educational practice. It is also important to acknowledge that there are sub-cultures and variations within Western and Eastern cultures influencing teaching and learning; however, these issues are not the focal aim of this paper.

Learning in Western and Eastern Cultures

Based on the literature (2, 7, 27, 28), learning in Western cultures is summarised in Table 8. Student-centred learning, which is based on constructivist and humanist principles, where students have control of their life and freedom to learn (33), is congruent with the nature of Western students and effectively enhance student learning.

Culture and its influences on dental education

[Table 8]

In contrast, Eastern students have ways of learning which are different from Western students in several issues. Learning in Eastern cultures is summarised in Table 9 based on the literature (2, 7, 27, 34-36).

[Table 9]

Eastern students tend to develop passive learning styles which allow them to listen, observe, and reflect on learning, without having interactions with others. This is a good way for avoiding confrontation with power inequality and for creating a harmonious learning environment (28). If students are placed into an active and open discussion, it may cause high levels of stress and inhibition. It implies that the nature of Eastern cultures may not be congruent with student-centred active learning; rather a teacher-centred approach may be more appropriate to support student learning.

Misconceptions about Western and Eastern Ways of Learning

Put simplistically, student-centred active learning is congruent with Western cultures; whereas, for Eastern students, teacher-centred passive learning is still valued. The main barrier for Eastern students adapting to student-centred learning probably comes from their behaviours and beliefs which have been reinforced by family, school and society. Student-centred approaches have been shown to have benefits over teacher-centred approaches (37, 38). By inference, this suggests that Western students possess better active learning skills than Eastern students.

Culture and its influences on dental education

However, this immediate assumption is simplistic. In terms of Western cultures, it is claimed that in individualistic cultures (Table 3), learning is driven by personal success (intrinsic motivation), which helps students gain academic success (7); this can however create ego and a sense of self-centredness (36). These by-products possibly compromise collaborative learning and group dynamics, as students care about themselves more than group achievement. Similarly, a masculine culture (Table 4) can create a high level of competition amongst students. It can enhance the negative effects of individualistic cultures, in that students compete with each other only for personal success. Some students may be left behind and develop learning difficulties and problems. In Short-Term Orientation (STO) cultures (Table 6), although students actively participate in a group from the beginning of a lesson, it was found that the level of engagement and contribution gradually decreases over time (28). One possible reason is that STO cultures focus on short-term achievement; when an immediate goal (e.g. a core learning outcome) is achieved, students begin to lose interest in, or motivation for, further learning. This suggests that group learning and effectiveness can be compromised at the later stage of learning.

In short, most Western students are perceived to be culturally capable of student-centred learning; however, not all students necessarily prefer to learn merely by this approach. The nature of Western cultures can compromise the effectiveness of group-based active learning. It cannot be generalised that Western students develop better learning through active learning than Eastern students.

As for the Eastern cultures, several studies show that cultural traits of Eastern students can support and enhance student-centred learning. Some cultures develop strategies which effectively reduce the power distance among group members and improve group dynamics. In one Eastern culture for instance, in a meeting, individuals tend to treat other members as if they were kin (e.g. brother-sister) (39). It creates a relaxed environment and lessens the formality of communication, as well as introducing a sense of trust and belonging. It can greatly encourage better discussion and engagement. Additionally, students can effectively learn from

Culture and its influences on dental education

student-centred learning when they are familiar with and clearly understand what they need to do in the learning process (40).

It has been suggested that Eastern students can appreciate and gain benefits from Western learning strategies (e.g. active learning), if they are provided with sufficient time and appropriate support that allows them to develop strategies to cope with the new strategies (34, 41). A study by Phuong-Mai, Terlouw and Pilot (28) showed that the level of engagement of Eastern students gradually increased over the time. At the later stage of the session, Eastern students participated more in the group and gained learning achievement ahead of Western students. This can be explained as follows: when students are familiar with the group and environment, they are able to lessen the power distance and take more control of the learning situation. Students begin to gain mutual trust among group members which allows them to be comfortable with and confident in engaging with open and argumentative discussion. This could also enhance collaborative learning and group dynamics.

In summary, educators need to be aware that LPD and HUA in Eastern cultures (Tables 3 and 5) may mean that some students may have difficulty with aspects of student-centred learning. However, Eastern students are able to learn and are able to gain high academic success through student-centred learning. Time, resources, and support for students to develop appropriate learning strategies are essential. Therefore, it can be asserted that Eastern students can gain benefits and learning achievement from active learning, as much as Western students.

Western and Eastern Perceptions about Learning

According to Watkins (36), in Western cultures, 'understanding' is perceived as a 'sudden insight' (i.e. understanding occurs at a specific time). Learning is a result of an ability of individuals to gain sudden insight. Learning is skill-dependent and students need essential skills which enable them to develop learning. This possibly explains why Western educational philosophy focuses on student-centeredness and

Culture and its influences on dental education

active learning, as they believe that interactions and group activities allow students to develop 'skills for learning'.

In Eastern cultures, in contrast, 'understanding' is a 'process' for discovering meaning. It requires time and reflection on a particular issue (34). Learning is a result of hard work and cognitive effort, rather than an ability to gain insight (36). While students require cognitive ability to reflect on information, 'what needs to be learned' is possibly more important than 'skills for learning'. Thus, students use the listening process to grasp understanding, and then use thinking processes (i.e. reflection) to develop learning. They may perceive that active engagement is not an effective strategy for listening and thinking. This notion is congruent with the literature which reveals that Eastern students possess assimilating learning style – learning through thinking and reflection (24, 26). From the Western perspective, the strategy used by Eastern students can be perceived as passive learning, although it involves higher-ordered thinking skills.

The Roles of Repetition and Memorising

In order to develop learning, Eastern students utilise repetition and memorising as the main strategies. Repetition is an initial process of accumulating and familiarising information which leads to a memorisation process where information is stored and ready for retrieving in the future (34). If the learning process involves only repetition and memorising without reflection and selection of relevant information, it is definitely passive learning. In this case, it can firmly be asserted that passive learning is less beneficial than active learning.

However, in Eastern cultures, memorisation provides students with a pool of information (facts), and enables them to develop critical reflection, understanding, and meaningful learning (36). It can be asserted that this process is strategic learning, as students begin remembering all the information and identifying and selecting information relating to a problem or context they subsequently develop

Culture and its influences on dental education

learning from relevant information. The lack of engagement of Eastern students at the beginning of active learning is probably the result of students trying to develop fundamental knowledge through cognitive processes, rather than learning through interactions (28).

Arguably if deep learning has been developed, it is possible to apply knowledge to other contexts (33) which might advantage Western approaches to learning. However, it can be argued that knowledge transfer also requires understanding of context (42, 43) which might be developed from repetition and memorising, thus advantaging Eastern approaches to learning. Eastern students may have more prior knowledge (a pool of information) and understanding of contexts than Western students.

It is not possible to indicate whether Western learning or Eastern learning is more effective. Western culture's emphasis on skills for learning and learning through active engagement are congruent with social constructivist and humanist learning theories – where learning is based on an individual's capability to learn and how individuals interact with others and environments (33). By contrast, Eastern culture emphasises cognitive ability and reflection, which relates to cognitivist and radical constructivist theories where learning is based on memory and the ability to make meaning of information (44, 45). Although they focus on different aspects, both Western and Eastern learning comprise active learning components which are effective and beneficial for learning. In short, Western students tend to develop learning through 'skill-based active learning' while Eastern students utilise 'cognitive-based active learning' as a main learning strategy.

Learning Styles and Cultures

Learning style is the way that learners develop learning (46, 47). There are a number of models which explain student learning styles. The model which is generally used in education especially in studies about learning styles is Kolb's Learning Style

Culture and its influences on dental education

Inventory (LSI) (25, 48, 49). Based on Kolb's experiential learning theory, the LSI classified learning styles into four types: accommodation (learning by doing and feeling), divergence (learning by observing and feeling), assimilation, (learning by observing and thinking) and convergence (learning by doing and thinking). Several studies have found that most students from Western cultures grasp knowledge through feeling (concrete experience) and develop learning by doing (active experimentation) – indicating they possess accommodation learning style; Students from Eastern cultures grasp knowledge via thinking (abstract conceptualisation) and develop learning by observing (reflective observation) – implying that they possess an assimilating learning style (24, 26, 50). The relationship between students' cultural background and learning styles is illustrated in Figure 1 (7, 27, 34, 36).

[Figure 1]

Although individuals have unique traits which closely link to personality and cultural background (7), it is possible to hypothesise that learning styles are fixed within cultures. This hypothesis is coherent with a study of Barmeyer (23), which found that students from a similar heritage have similar learning styles. However, Wong (41) argued that learning styles are not fixed, but adaptable. Educational specialisation (e.g. learning for a profession) is one factor that shapes student learning styles (26). In the early years of university, students mainly learn general concepts and may not be fully exposed to professional contexts. Learning styles that students have used since they were in secondary education may still be applicable in this situation. However, in the later stages, learning mainly emphasises discipline-specific concepts within professional contexts. Students need to gradually adjust and develop learning styles to be congruent with professional contexts. Additionally, several studies reveal that although Eastern students face some initial learning difficulties, after exposure to student-centred active learning, they can adapt themselves into the new learning environments within the first few months (25, 34). This implies that learning styles may not be fixed, but are adaptable and influenced by learning contexts. Whether learning styles are fixed with cultures is still an ongoing debate.

Implications for Dental Educators

Dental education in Europe is being harmonised and developed toward comparable standards while its diversity has been maintained (51). If learning styles are not fixed with culture, and students can adapt their learning styles, a controversial issue relating to European education is raised. Is it necessary for educators to adapt educational strategies to support diversity and different learning styles, or is it a responsibility of students to adapt their learning styles to match learning environments?

Authors of some studies argue that educators need to be aware of cultural diversity and provide educational strategies which are congruent with students' backgrounds (23, 24). People's ability to adapt to new environments is limited (7), which suggests that students may not effectively adopt new learning approaches. Educators may therefore need to adapt their teaching styles and strategies to suit students' cultural backgrounds. However, it is not possible to change educational strategies to best suit every student's background. For example, educational specialisation is one factor that shapes student learning styles (26). Commonly a dental undergraduate programme begins with a year of basic science followed by a gradual introduction of clinical disciplines and diminishing basic dental sciences. Students need to adjust and develop learning styles to be able to learn effectively in particular contexts.

Wong (41) suggests that there is no need for local universities or educators to adapt educational strategies to suit non-local students as students' learning styles are adaptable. Several studies reveal that although Eastern students face some learning difficulties after exposure to student-centred active learning, they can adapt themselves into the new learning environments within the first few months (25, 34). Additionally, the level of engagement in active student-centred learning of Eastern

Culture and its influences on dental education

students progressively increase over the time after students begin to be familiar with a new educational context (28). Accordingly, educational success within Europe should be a mutual responsibility between students and educators. Students need to adapt themselves and their learning styles to learn effectively in different educational contexts. Simultaneously, educators need to be aware of cultural influences on student learning styles and provide appropriate support to maximise student learning (3, 52). For example:

- A combination of constructivist (active) and didactic (passive) learning may be beneficial, as both methods can complement each other.
- Educators need to maintain positive relationships with students.
- Cultural issues need to be discussed with students in order to reduce potential cultural biases.
- Support for developing and integrating cultural awareness into professional education and teacher training needs more consideration.

Such educational strategies need to be considered a part of professional development for dental educators.

Conclusion

The discussion in this paper has revealed that culture has a huge impact on students' behaviours and beliefs especially on the ways students approach and develop learning. An important role of educators is to acknowledge and respect students' cultural backgrounds to help students learn effectively. Understanding of culture provides a new aspect of teaching and learning especially in dental education. It also enables educators to recognise a wider context of educational practice as well as provide appropriate support from which different groups of students can benefit. This area of dental education still needs further development and could be a new horizon for developing future dental educators.

Conflicts of interest

The authors have no conflicts of interest to declare.

References

- Chuenjitwongsa S, Oliver R and Bullock A. Competence, competency-based education, and undergraduate dental education: A discussion paper. *European Journal of Dental Education* 2016.
- Hofstede G. Dimensionalizing cultures: The Hofstede model in context. *Online Readings in Psychology and Culture* 2011; 2 (1): 8.
- Parrish P and Linder-VanBerschoot J. Cultural dimensions of learning: Addressing the challenges of multicultural instruction. *The International Review of Research in Open and Distance Learning* 2010; 11 (2): 1-19.
- EHEA. The Bologna process 2020 - the European higher education area in the new decade. In: *Education CotCoEMRfH*, ed. Leuven/Louvain-la-Neuve Communiqué. Leuven: The European Higher Education Area, 2009.
- HESA.
- Jandt FE. *An introduction to intercultural communication: Identities in a global community*. London: Sage Publications, 2015.
- Hofstede G, Hofstede GJ and Minkov M. *Cultures and organizations: Software of the mind*, revised and expanded. McGraw-Hill, New York, NY, 2010.
- AAMC. *Cultural competence education*, 2005.
- Kawar TI. Cross-cultural differences in management. *International Journal of Business and Social Science* 2012; 3 (6): 105-111.
- Boode G. Boundaries on the move. The impact of cultural values and language on organizational design and communication within an organization in Thailand. *Asia Pacific Business Review* 2005; 11 (4): 519-533.
- Lim B. Examining the organizational culture and organizational performance link. *Leadership and Organization Development Journal* 1995; 16 (5): 16-21.
- Betancourt JR. Cross-cultural medical education: Conceptual approaches and frameworks for evaluation. *Academic Medicine* 2003; 78 (6): 560-569.
- Seeleman C, Suurmond J and Stronks K. Cultural competence: A conceptual framework for teaching and learning. *Medical Education* 2009; 43 (3): 229-237.
- Miroshnik V. Culture and international management: A review. *Journal of Management Development* 2002; 21 (7): 521-544.
- Hofstede GJ, Pedersen PB and Hofstede G. *Exploring culture: Exercises, stories and synthetic cultures*. Intercultural Press, 2002.

Culture and its influences on dental education

- Javidan M, House RJ, Dorfman PW, Hanges PJ and De Luque MS. Conceptualizing and measuring cultures and their consequences: A comparative review of globe's and hofstede's approaches. *Journal of International Business Studies* 2006: 37 (6): 897-914.
- Khatoon B, Hill K and Walmsley A. Can we learn, teach and practise dentistry anywhere, anytime? *British Dental Journal* 2013: 215 (7): 345-347.
- Schleyer TK, Thyvalikakath TP, Spallek H, Dziabiak MP and Johnson LA. From information technology to informatics: The information revolution in dental education. *Journal of Dental Education* 2012: 76 (1): 142-153.
- Blodgett JG, Bakir A and Rose GM. A test of the validity of hofstede's cultural framework. *Journal of Consumer Marketing* 2008: 25 (6): 339-349.
- Baskerville RF. Hofstede never studied culture. *Accounting, Organizations and Society* 2003: 28 (1): 1-14.
- Zakour AB. Cultural differences and information technology acceptance Proceedings of the 7th Annual Conference of the Southern Association for Information Systems 2003. 2004.
- Williamson D. Forward from a critique of hofstede's model of national culture. *Human Relations* 2002: 55 (11): 1373-1395.
- Barmeyer CI. Learning styles and their impact on cross-cultural training: An international comparison in france, germany and quebec. *International Journal of Intercultural Relations* 2004: 28 (6): 577-594.
- Charlesworth ZM. Learning styles across cultures: Suggestions for educators. *Education and Training* 2008: 50 (2): 115-127.
- Holtbrügge D and Mohr AT. Cultural determinants of learning style preferences. *Academy of Management Learning and Education* 2010: 9 (4): 622-637.
- Joy S and Kolb DA. Are there cultural differences in learning style? *International Journal of Intercultural Relations* 2009: 33 (1): 69-85.
- Park YS and Kim BS. Asian and european american cultural values and communication styles among asian american and european american college students. *Cultural Diversity and Ethnic Minority Psychology* 2008: 14 (1): 47.
- Phuong-Mai N, Terlouw C and Pilot A. Cooperative learning vs confucian heritage culture's collectivism: Confrontation to reveal some cultural conflicts and mismatch. *Asia Europe Journal* 2005: 3 (3): 403-419.
- Ashkanasy NM, Trevor-Roberts E and Earnshaw L. The anglo cluster: Legacy of the british empire. *Journal of World Business* 2002: 37 (1): 28-39.
- Szabo E, Brodbeck FC, Den Hartog DN, Reber G, Weibler J and Wunderer R. The germanic europe cluster: Where employees have a voice. *Journal of World Business* 2002: 37 (1): 55-68.
- Ostergren RC and Le Boss M. *The europeans: A geography of people, culture, and environment.* Guilford Press, 2011.
- Rahim WAW, Nor Laila M and Shafie M. Inducting the dimensions of islamic culture: A theoretical building approach and website ia design application 21st International Symposium Human Factors in Telecommunication: User Experience of ICTs. Prentice Hall, 2008: 89-96.
- Jordan A, Carlile O and Stack A. *Approaches to learning: A guide for educators.* Open University Press, 2008.
- Kember D. Misconceptions about the learning approaches, motivation and study practices of asian students. *Higher Education* 2000: 40 (1): 99-121.
- Urubshurrow VK. *Introducing world religions.* JBE Online Books, 2008.
- Watkins D. Learning and teaching: A cross-cultural perspective. *School Leadership and Management* 2000: 20 (2): 161-173.
- Baeten M, Kyndt E, Struyven K and Dochy F. Using student-centred learning environments to stimulate deep approaches to learning: Factors encouraging or discouraging their effectiveness. *Educational Research Review* 2010: 5 (3): 243-260.

Culture and its influences on dental education

- O'Neill G and McMahon T. Student-centred learning: What does it mean for students and lecturers. In: O'Neill G, Moore S, McMullin B, eds. *Emerging issues in the practice of university learning and teaching*. Dublin, 2005.
- Holmes H, Tangtongtavy S and Tomizawa R. *Working with the thais: A guide to managing in thailand*. White Lotus Bangkok, Thailand, 1995.
- Choon-Eng Gwee M. Globalization of problem-based learning (pbl): Cross-cultural implications. *The Kaohsiung Journal of Medical Sciences* 2008; 24 (3): S14-S22.
- Wong J. Are the learning styles of asian international students culturally or contextually based. *International Education Journal* 2004; 4 (4): 154-166.
- Kaufman DM and Mann KV. Teaching and learning in medical education: How theory can inform practice. In: Swanwick T, ed. *Understanding medical education: Evidence, theory and practice*. Willey-Blackwell, 2010: 16-36.
- Lynch R, Leo S and Downing K. Context dependent learning: Its value and impact for workplace education. *Education and Training* 2006; 48 (1): 15-24.
- Ertmer PA and Newby TJ. Behaviorism, cognitivism, constructivism: Comparing critical features from an instructional design perspective. *Performance Improvement Quarterly* 1993; 6 (4): 50-72.
- Karagiorgi Y and Symeou L. Translating constructivism into instructional design: Potential and limitations. *Educational Technology and Society* 2005; 8 (1): 17-27.
- Kolb AY. *The kolb learning style inventory—version 3.1 2005 technical specifications* Boston: Hay Resource Direct, 2005.
- Cassidy S. Learning styles: An overview of theories, models, and measures. *Educational Psychology* 2004; 24 (4): 419-444.
- ALQahtani DA and Al-Gahtani SM. Assessing learning styles of saudi dental students using kolb's learning style inventory. *Journal of Dental Education* 2014; 78 (6): 927-933.
- Ozcan M. Effects of experimental learning and kolb learning style inventory theories on learning. *Language, Culture, and Education* 2015: 166-181.
- Yamazaki Y. Learning styles and typologies of cultural differences: A theoretical and empirical comparison. *International Journal of Intercultural Relations* 2005; 29 (5): 521-548.
- Harzer W, Tausche E and Gedrange T. Harmonisation of dental education in europe—a survey about 15 years after visitation of dental schools participating in the dented project. *European Journal of Dental Education* 2015.
- Ladson-Billings G. Toward a theory of culturally relevant pedagogy. *American Educational Research Journal* 1995; 32 (3): 465-491.

A list of tables and figures

Table 1	The Hofstede's cultural dimension model.
Table 2	Characteristics of people in the 'Hierarchy' dimension and the ranking of European countries within the dimension.
Table 3	Characteristics of people in the 'Identity' dimension and the ranking of European countries within the dimension.
Table 4	Characteristics of people in the 'Gender' dimension and the ranking of European countries within the dimension.
Table 5	Characteristics of people in the 'Truth' dimension and the ranking of European countries within the dimension.
Table 6	Characteristics of people in the 'Virtue' dimension and the ranking of European countries within the dimension.
Table 7	Characteristics of people in the 'Happiness' dimension and ranking of European countries within the dimension.
Table 8	Characterisation of Learning in Western cultures.
Table 9	Characterisation of Learning in Eastern cultures.
Figure 1	Students' cultural background and learning styles.

Table 1 The Hofstede’s cultural dimension model (Hofstede et al. 2010; Hofstede 2011).

Dimension	Description
1. Hierarchy (Small Power Distance vs Large Power Distance)	This dimension refers to the inequalities and unequal distribution of power (power distance) between people within a culture. In a culture where the power distance is small (SPD), people try to equalise the power. They require justification for the use of power. In large power distance (LPD) cultures, people accept the inequalities of power without a need for justification. For example, teachers have more power than students, so students must obey their teachers.
2. Identity (Individualism vs Collectivism)	This dimension concerns the relationship between individuals and the group to which they belong. One pole of the dimension is ‘Individualism’, representing a loose social framework where individuals take care of themselves; the opposite pole – ‘Collectivism’ – sees individuals as a part of the society, where they are expected to take care of and show loyalty to each other.
3. Gender (Masculinity vs Femininity)	This dimension highlights gender roles and the control of aggression within a culture. It refers to the distribution of values between genders, rather than the characteristics of individuals. The masculinity pole demonstrates preferences for achievement, assertiveness and reward for success; the femininity pole emphasises modesty, caring and quality of life.
4. Truth (Low Uncertainty Avoidance vs High Uncertainty Avoidance)	This dimension focuses on how people cope with ambiguity or unpredictable situations and how relaxed they feel about the the future (i.e. desire to control the future or just let it happen). Low uncertainty avoidance (LUA) cultures represent people who are flexible and have a more relaxed attitude; high uncertainty avoidance (HUA) cultures comprise people who are intolerant of unconventional circumstances.

Culture and its influences on dental education

<p>5. Virtue (Short-Term Orientation vs Long-Term Orientation)</p>	<p>This dimension has its roots in the Confucianism philosophy in China and has been found to correlate with the economic growth of a country. It reflects the concerns of truth and work. Short-term orientation (STO) indicates that people think about consequences of their actions only in the present situation (i.e. take each day as it comes). In contrast, long-term orientation (LTO) indicates that people are concerned about future situations (i.e. planning ahead for a better future).</p>
<p>6. Happiness (Indulgence vs Restraint)</p>	<p>This cultural dimension concerns the gratification of basic human desire. The indulgence pole represents relatively free gratification, while the restraint pole reflects the control of gratification in a society. This dimension was added to the model recently. Although the authors do not label this dimension 'Happiness', they refer to 'Happiness Research', which they analysed when developing this dimension.</p>

Table 2 Characteristics of people in the ‘Hierarchy’ dimension and the ranking of European countries within the dimension (based on Hofstede et al. 2010; Hofstede 2011).

Hierarchy Dimension	
Small Power Distance (SPD)	Large Power Distance (LPD)
<ul style="list-style-type: none"> ▪ Parents treat their children as equal ▪ Older people are perceived as equal as younger people ▪ A leader should consult followers 	<ul style="list-style-type: none"> ▪ Parents teach their children obedience ▪ Older people are respected by younger people ▪ A boss should tell subordinates what to do
SPD ←————→ LPD	
Austria (W) Denmark (N) Ireland (N) Sweden (N) Norway (N) Finland (N) Switzerland (W) UK (N) Germany (W) Netherland (W) Luxembourg (W) Estonia (N) Lithuania (N) Latvia (N) Hungary (E) Italy (S) Malta (S) Spain (S) Czech Rep. (E) Greece (S) Portugal (S) Belgium (W) Poland (E) France (W) Bulgaria (E) Slovenia (S) Croatia (S) Serbia (S) Romania (E) Russia (E) Slovakia (E)	

Table 3 Characteristics of people in the ‘Identity’ dimension and the ranking of European countries within the dimension (based on Hofstede et al. 2010; Hofstede 2011).

Identity Dimension	
Individualism	Collectivism
<ul style="list-style-type: none"> ▪ People are expected to look after themselves and take care of their own business ▪ Individuals have rights and are expected to express their own opinion ▪ Tasks are more important than relationships 	<ul style="list-style-type: none"> ▪ People’s concerns are based on the group and the word “We” is normally used ▪ Harmony needs to be maintained by avoiding confrontation ▪ Relationships are more important than tasks
Individualism ←————→ Collectivism	
UK (N) Hungary (E) Netherlands (W) Belgium (W) Italy (S) Denmark (N) France (W) Sweden (N) Ireland (N) Latvia (N) Norway (N) Switzerland (W) Germany (W) Finland (N) Estonia (N) Lithuania (N) Luxembourg (W) Poland (E) Malta (S) Czech Rep. (E) Austria (W) Slovakia (E) Spain (S) Russia (E) Greece (S) Croatia (S) Bulgaria (E) Romania (E) Portugal (S) Slovenia (S) Serbia (S)	

Table 4 Characteristics of people in the ‘Gender’ dimension and the ranking of European countries within the dimension (based on Hofstede et al. 2010; Hofstede 2011).

Gender Dimension	
Masculinity	Femininity
<ul style="list-style-type: none"> ▪ Challenge, advancement and recognition are essential for life ▪ A conflict is solved by letting the strongest win ▪ Work is more important than family 	<ul style="list-style-type: none"> ▪ There is much emphasis on relationships and quality of life ▪ A conflict is solved by negotiation and compromise ▪ Balance between work and family
Masculinity	Femininity
Slovakia (E) Hungary (E) Austria (W) Italy (S) Switzerland (W) Ireland (N) Germany (W) UK (N) Poland (E) Czech Rep. (E) Greece (S) Belgium (W) Luxembourg (W) Malta (S) France (W) Serbia (S) Romania (E) Spain (S) Bulgaria (E) Croatia (S) Russia (E) Portugal (S) Estonia (N) Finland (N) Lithuania (N) Slovenia (S) Denmark (N) Netherlands (W) Latvia (N) Norway (N) Sweden (N)	

Table 5 Characteristics of people in the ‘Truth’ dimension and the ranking of European countries within the dimension (based on Hofstede et al. 2010; Hofstede 2011).

Truth Dimension	
Low Uncertainty Avoidance (LUA)	High Uncertainty Avoidance (HUA)
<ul style="list-style-type: none"> ▪ Uncertainty in life is acceptable ▪ Low stress and anxiety but high self-control ▪ Accept different ideas from other people and be curious about the differences 	<ul style="list-style-type: none"> ▪ Uncertainty in life is a threat ▪ High stress, anxiety and emotionality ▪ Differences amongst people are perceived as dangerous
LUA ←————→ HUA	
Denmark (N) Sweden (N) UK (N) Norway (N) Slovakia (E) Netherland (W) Switzerland (W) Finland (N) Estonia (N) Latvia (N) Lithuania (N) Germany (W) Luxembourg (W) Australia (W) Czech Rep. (E) Italy (S) Croatia (S) Hungary (E) Bulgaria (E) Spain (S) France (W) Slovenia (S) Romania (E) Serbia (S) Poland (E) Belgium (W) Russia (E) Malta (S) Portugal (S) Greece (S)	

Table 6 Characteristics of people in the ‘Virtue’ dimension and the ranking of European countries within the dimension (based on Hofstede et al. 2010; Hofstede 2011).

Virtue Dimension	
Short-Term Orientation (STO)	Long-Term Orientation (LTO)
<ul style="list-style-type: none"> ▪ What is good or bad is universal so that good people should have steadiness and stability ▪ Traditions should be respected ▪ People look for quick results and have less investment for the future 	<ul style="list-style-type: none"> ▪ What is good or bad is relative so that good people should adapt to the circumstances ▪ Traditions should be adapted to a context ▪ People work hard for a long-term result and thrift is important for the future
STO ←	→ LTO
Ireland (N) Iceland (N) Portugal (S) Norway (N) Denmark (N) Poland (E) Finland (N) Greece (S) Malta (S) Spain (S) Slovenia (S) UK (N) Romania (E) Serbia (S) Sweden (N) Hungary (E) Croatia (S) Austria (W) Italy (S) Albania (S) Macedonia (S) France (W) Luxembourg (W) Netherlands (W) Latvia (N) Bulgaria (E) Bosnia (S) Czech Rep. (E) Moldova (E) Switzerland (W) Montenegro (S) Slovakia (E) Belarus (E) Russia (E) Lithuania (N) Belgium (W) Estonia (N) Germany (W)	Germany (W)

Table 7 Characteristics of people in the ‘Happiness’ dimension and ranking of European countries within the dimension (based on Hofstede et al. 2010; Hofstede 2011).

Happiness Dimension	
Restraint	Indulgence
<ul style="list-style-type: none"> ▪ Low percentage of happy people ▪ People are not primarily concerned with freedom of speech ▪ People perceive their lives in helplessness 	<ul style="list-style-type: none"> ▪ Higher proportion of happy people ▪ People concerned with freedom of speech ▪ People have a perception of personal life control
Restraint ←————→ Indulgence	
Latvia (N) Ukraine (E) Albania (S) Belarus (E) Lithuania (N) Bulgaria (E) Estonia (N) Moldova (E) Romania (E) Montenegro (S) Russia (E) Serbia (S) Slovakia (E) Poland (E) Czech Rep. (E) Italy (S) Hungary (E) Croatia (S) Portugal (S) Macedonia (S) Germany (W) Spain (S) Bosnia (S) Slovenia (S) France (W) Greece (S) Norway (N) Luxembourg (W) Belgium (W) Finland (N) Austria (W) Ireland (N) Andorra (S) Malta (S) Switzerland (W) Iceland (N) Netherlands (W) UK (N) Denmark (N) Cyprus (S)	

Table 8 Characterisation of Learning in Western cultures.

Dimension	Description
SPD (Small Power Distance)	Students are not dependent on educators. Educators are learning facilitators who support learning, rather than directors who control and frame student learning. Students actively participate in a group and are confident to express their opinions, disagreements and criticisms in front of their educators.
Individualism	Students care most about their work and personal achievement and are eager to take responsibility for their own learning. Students prefer a straight-forward conversation to initiate and maintain in-depth discussion during a session.
Masculinity	Students are driven by academic success and learning, and the sense of achievement. Student-centred learning is an effective strategy to motivate student engagement and learning.
LUA (Low Uncertainty Avoidance)	Students respect and accept different opinions and perspectives from others. Students have an ability to cope with uncertainty and argumentative discussions. The use of ill-defined and low-structure context in an active learning session is an effective strategy for developing collaborative learning.
STO (Short-Term Orientation)	Students set an immediate learning goal and actively participate in a group from the beginning of the session, so as to achieve the goal.
Indulgence	Students are eager to express and share opinions with others and are comfortable to contest traditional beliefs and values.

Table 9 Characterisation of Learning in Eastern cultures.

Dimension	Description
LPD (Large Power Distance)	Students are dependent on educators. Students accept educators' role in outlining and transferring knowledge; they need to obey and believe in everything that educators teach. Inferior students have a lack of opportunities to express their opinions, or are not allowed to argue with superior students.
Collectivism	Indirect communication is often used to prevent negative emotion, save others' 'face' and avoid losing own 'face'. The aim of education should emphasise the development of skills and competence for being accepted as a part of a group.
Femininity	Students believe that one should not do anything to hurt people or make others feel uncomfortable, both physically and mentally. Students tend to avoid argumentative discussion and challenging each other in order to prevent tension, maintain positive environments and create harmony within a group.
HUA (High Uncertainty Avoidance)	Students prefer learning in a well-defined context with clear directions because uncertainty is perceived as a threat. The use of ill-defined context with complex problems in HUA cultures can discourage student learning.
LTO (Long-Term Orientation)	Students invest resources and work hard for their long-term learning and better future, rather than for immediate results. Students may not actively engage with a session unless they have established trust and stability within the group.
Constraint	Students lack of freedom of expression because they are afraid of the negative consequences created by the threatening use of power by educators.

Figure 1 Students' cultural background and learning styles (based on Kember 2000; Watkins 2000; Kolb 2005; Park and Kim 2008; Hofstede et al. 2010).

