Preferred teaching and learning approaches of students considered ‘Generation Y’ in health professions pre registration education: A comprehensive systematic review protocol

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Review question/objective

The aim of this systematic review is to present the best available evidence on teaching and learning strategies or methods preferred by ‘Generation Y’ health care professional students. The specific review question to be addressed is:

What are the teaching and learning strategies or methods preferred by ‘Generation Y’ health care professional students?

Objectives

The quantitative objective is to identify teaching and learning approaches and activities preferred by ‘Generation Y’ students in health professional tertiary education, reported by students.

The qualitative objective is to describe the meaningfulness of teaching and learning approaches and activities preferred by ‘Generation Y’ health professional students in tertiary education as reported by students.
Background

The goal of health professional education is to produce competent graduates who are eligible for registration with a regulatory body. Universities endeavor to provide high quality professional programs aimed at developing the knowledge, skills and professional attributes students will require to practice their health care profession. Students are an important stakeholder in the process of monitoring and evaluating the quality of programs, courses and teaching and learning\(^1\). Student perspectives can also be an integral part of quality enhancement procedures aimed at improving teaching and learning activities\(^2\). One student group, those considered ‘Generation Y’ are said to have unique teaching and learning preferences from previous generations.

‘Generation Y’ is used commonly as a stereotypical descriptor for the majority of undergraduate students in Australian Tertiary education\(^3\). In generational theory, the socio-cultural construction of society is based on distinct generations: the ‘GI generation’ born in the period 1901-1924; the ‘Silent Generation’ 1925-1942; the ‘Baby Boomers’ 1943-1960; ‘Generation X’ 1961-1982; ‘Generation Y’ (also known as the ‘Millennials’) 1983 – 2002 and ‘Generation Z’ from 2003 onwards\(^4\). The sociologist Karl Mannheim first proposed that each generation has a similar worldview, due to exposure to common historical and social events during their formative years\(^5\). Every member of a specific generation will not have experienced the same life events, but they will have a shared awareness which creates a ‘generational personality’\(^6\).

Prensky (2001) argued that “today’s students are no longer the people our educational systems were designed to teach”\(^7\) (p.1). The premise being that this group has different expectations and learning styles than previous generations\(^8\). This assertion is based on the arrival and rapid dissemination of technology in the formative years of ‘Generation Y’ students, with the purported consequence that this group thinks and processes information differently, as they are ‘digital natives’\(^8, 9, 10, 11\). Consequently, it is claimed that ‘Generation Y’ has a relationship with technology that is intuitive and spontaneous, with technology use being as natural as breathing\(^12\). Technology as an overarching term includes computer games, computers, email, the internet, mobile phones and social networking\(^13\). Although all generations use technology, Prensky (2001) termed older generations ‘digital immigrants’ as they maintain traditional learning styles which are enhanced by, rather than molded by, technology\(^7\).

Many authors have concluded that as ‘Generation Y’ students have assimilated technology into their daily lives new educational methods and approaches are required to accommodate their different learning preferences\(^14, 15, 16, 17\). These different methods include the inclusion of ‘fun’ learning activities within multimedia environments, reflecting the visually rich internet, gaming and other technologies which students are said to have engaged with throughout their lives\(^15, 9, 18\). Additionally, due to the immediacy of technology, authors have suggested that this group have short attention spans, are skilled multitaskers and are easily bored\(^19, 10\). Recommended teaching and learning strategies therefore include more interactive activities, providing information in shorter segments as well as creating more experiential activities which may include technologies such as gaming, blogs, wikis, online discussions, social networking and simulation\(^20, 21, 14, 22, 23, 16\). As these methods facilitate collaboration and sharing they are collectively termed Web 2.0 technologies\(^24\).

Conversely some writers have argued that these responses by education is a form of ‘moral panic’ based on little evidence that all students have been immersed in technology in their formative years or
indeed have different learning preferences than other generations. This view was supported in the findings of two surveys of health professional students, one of nursing students and one of dental hygienist students in the USA. Both reported no difference in preferred teaching methods between generations.

Regardless, universities are continuing to use technology for the benefit of all generations, making courses more accessible and flexible with some courses delivered entirely online. However, in some health professions there are indications that this may not meet the preferences of ‘Generation Y’ students. In the surveys mentioned above, most students did not favor completing fully online courses but preferred blended courses, those with both traditional and online formats. Blended courses, in one comparative study of student nurses, has also been reported as being more effective than traditional formats, finding that students that participated in a blended learning course received higher grades than those who participated in the same course using traditional delivery. Blended learning provides opportunity for face to face learning, which was also reported by nursing students as a teaching preference, describing that skill demonstration was more valued than lectures on skills. On-line learning, which can be rich in visual and aural content, often involves participating in some way in groups. Working together in groups has also been a reported preference of ‘Generation Y’ students as a consequence of students’ communicating in groups through mobile phones, participation in on-line gaming and other technologies such as social networking connecting them to each other and to the global world.

Group work can be used as a learning approach as well as a method of both formative and summative assessment. Nursing students in the USA, however, reported they preferred lectures to group work and group work, inside or outside of class, was not a preferred teaching method. Alternatively, dental hygienist students reported group work as favorable but students preferred to pick their own work groups rather than be assigned peers by faculty. Contrary to the ‘Generation Y’ stereotype of a highly technologically competent generation, Sanders (2007) found that 1st year medical students in the UK, whilst being open to using collaborative Web 2.0 technologies, had little experience of their use prior to university. Furthermore, one Australian inter-university study reported that students, including those in ‘professional programs’, varied in their use and skill in technology, with advanced power users in the minority. Nevertheless, there are developments in health professional education such as simulation through virtual reality or avatars being developed and these are an extension of both Web 2.0 and computer gaming technology. Generational theorists advocate that ‘Generation Y’ students are experienced gamers and therefore are ideally placed to learn using this technological media. However, one study of nurses in two American universities found that most ‘Generation Y’ students did not play computer games but most respondents, across generations, saw the potential for this media and were positive about its introduction into nursing education. This may indicate that ‘Generation Y’ students have a preference for Web 2.0 technologies in education but may require suitable preparation before participating in highly technological learning environments.

These studies have indicated that ‘Generation Y’ health professional students in tertiary education have a unique perspective on appropriate teaching and learning methods which contribute towards the development of graduating competence. A search of the Cochrane Library, the Joanna Briggs Institute Library, in addition to CINAHL, Medline and PROSPERO databases indicated that no
systematic review exists or is underway to explore the teaching and learning preferences of 'Generation Y' health professional students. A systematic review will inform health professional educators of 'Generation Y' students preferred teaching and learning activities relevant to the development of high quality courses and curricula.

Keywords
Teaching; learning; Student views; Student preferences; 21st century learner; Online; on-line learning; Avatar; Groupwork; group work; Web 2.0 technology; Educational preferences; Social networking

Inclusion criteria

Types of participants
This review will focus on health professional students in tertiary education from 2000 onwards. Health professions to be included are as follows: medicine, nursing, physiotherapy, occupational therapy, speech pathology, medical radiation science, nutrition and dietetics, oral health and podiatry. Students must be identified as 'Generation Y' or an associated generational label including the 'Millennials', the 'Next Generation', the 'Net Generation', the 'Digital Generation' or the abbreviated title 'Gen Y'.

Types of intervention(s)/phenomena of interest
For the purposes of this review teaching and learning strategies are defined as any curricula design, formative or summative assessment, feedback mechanisms or innovative technological approaches or course structure used in the educational curricula of health care professional students.

For the purpose of this review teaching and learning methods are defined as any educational task, activity or process which aims to engage students to construct meaning, or develop the knowledge, skills or attributes to meet the learning objectives of a course or program and contribute to graduating competence.

The quantitative component of the review will consider studies that investigate teaching and learning strategies utilized in the development of ‘Generation Y’ health professional students.

The qualitative component of this review will consider studies that report on the experiences or views of health professional ‘Generation Y’ students, regarding teaching and learning strategies or methods.

Types of outcomes
This review will consider studies that include the main outcome measures of teaching and learning which is the construction of meaning and the attainment of skills, knowledge and attitudes that meet the learning objectives set contributing to the achievement of practice competence. Other educational outcome measures such as student satisfaction and student engagement in the teaching and learning process will also be included. The qualitative outcomes of interest will incorporate the students self reported experiences of learning approaches.
Types of studies

The quantitative component of the review will consider both analytical and descriptive epidemiological study designs including prospective and retrospective cohort studies, case control studies, case series, individual case reports and cross sectional studies for inclusion.

The qualitative component of the review will consider studies that focus on qualitative data including, but not limited to, designs such as phenomenology, grounded theory, ethnography, action research and feminist research.

Search strategy

The search strategy aims to find both published and unpublished studies. A three-step search strategy will be utilized in this review. An initial limited search of MEDLINE and CINAHL will be undertaken followed by analysis of the text words contained in the title and abstract, and of the index terms used to describe article. A second search using all identified keywords and index terms will then be undertaken across all included databases. Thirdly, the reference list of all identified reports and articles will be searched for additional studies. Studies published in English will be considered for inclusion in this review. As the first cohort of students considered ‘Generation Y’ would have turned eighteen years of age in 2000 and therefore in large groups would have entered tertiary education, only studies published from 2000 to present will be considered for inclusion in this review.

Initial search terms will be:

Teaching and learning
Student views
Student preferences
21st century learner
Online and on-line learning
Avatar
Groupwork and group work
Web 2.0 technology
Educational preferences
Social networking


The second step will involve searching electronic databases using several combinations and permutations of key words and index terms identified by the initial literature scoping. All the electronic databases will be searched from their inception dates to current. Using a defined search and retrieval
method, the databases to be searched are:

1. AMED
2. CINAHL
3. Cochrane Database of Controlled Clinical Trials
4. Dissertations and Theses (Proquest)
5. EMBASE
6. ERIC
7. MEDLINE
8. ProQuest Nursing Journals
9. PROSPERO
10. PsycINFO
11. Scopus
12. Web of Science
13. Informit
14. Academic Search Complete
15. Research Starters Education
16. Trip
17. Google Scholar
18. Australasian Digital Thesis Program
19. ETHOS-BETA
20. Library of Theses and Dissertations

**Assessment of methodological quality**

Quantitative papers selected for retrieval will be assessed by two independent reviewers for methodological validity prior to inclusion in the review using standardized critical appraisal instruments from the Joanna Briggs Institute Meta Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI) (Appendix I). Any disagreements that arise between the reviewers will be resolved through discussion, or with a third reviewer.

Qualitative papers selected for retrieval will be assessed by two independent reviewers for methodological validity prior to inclusion in the review using standardized critical appraisal instruments from the Joanna Briggs Institute Qualitative Assessment and Review Instrument (JBI-QARI) (Appendix I). Any disagreements that arise between the reviewers will be resolved through discussion, or with a third reviewer.
Data collection

Quantitative data will be extracted from papers included in the review using the standardized data extraction tool from JBI-MAStARI (Appendix II). The data extracted will include specific details about the interventions, populations, study methods and outcomes of significance to the review question and specific objectives.

Qualitative data will be extracted from papers included in the review using the standardized data extraction tool from JBI-QARI (Appendix II). The data extracted will include specific details about the interventions, populations, study methods and outcomes of significance to the review question and specific objectives.

Data synthesis

Quantitative papers will, where possible, be pooled in statistical meta-analysis using JBI-MAStARI. All results will be subject to double data entry. Effect sizes expressed as relative risk for cohort studies and odds ratio for case control studies (for categorical data) and weighted mean differences (for continuous data) and their 95% confidence intervals will be calculated for analysis. A random effects model will be used for meta analysis, and heterogeneity will be assessed statistically using the standard Chi-square. Where statistical pooling is not possible the findings will be presented in narrative form including tables and figures to aid in data presentation where appropriate.

Qualitative research findings will be pooled using JBI-QARI. This will involve the aggregation or synthesis of findings to generate a set of statements that represent that aggregation, through assembling the findings rated according to their quality, and categorizing these findings on the basis of similarity in meaning. These categories will then be subjected to a meta-synthesis in order to produce a single comprehensive set of synthesized findings that can be used as a basis for evidence-based practice. Where textual pooling is not possible the findings will be presented in narrative form.

Conflicts of interest

None known.

Acknowledgements

Caroline Hills is a PhD candidate with the University of Newcastle Australia. This systematic review is part of Caroline Hills PhD thesis entitled ‘The 21st century learner in occupational therapy: Developing and evidencing graduating competence’.

Acknowledgement is given to Caroline's PhD supervisors at the University of Newcastle.

Professor Susan Ryan
Professor Derek R. Smith
Associate Professor Helen Warren-Forward
References


15. Jonas-Dwyer D, Pospisil R. The millennial effect: Implications for academic development, transforming knowledge into wisdom. 27th HERDSA Annual Conference; 2004 July 4-7; Miri, Sarawak, Malaysia.


Appendix I: Appraisal instruments

QARI Appraisal instrument

JBI QARI Critical Appraisal Checklist for Interpretive & Critical Research

Reviewer __________________________ Date __________________________

Author __________________________ Year ________ Record Number ________

1. Is there congruity between the stated philosophical perspective and the research methodology? ☐ ☐ ☐ ☐

2. Is there congruity between the research methodology and the research question or objectives? ☐ ☐ ☐ ☐

3. Is there congruity between the research methodology and the methods used to collect data? ☐ ☐ ☐ ☐

4. Is there congruity between the research methodology and the representation and analysis of data? ☐ ☐ ☐ ☐

5. Is there congruity between the research methodology and the interpretation of results? ☐ ☐ ☐ ☐

6. Is there a statement locating the researcher culturally or theoretically? ☐ ☐ ☐ ☐

7. Is the influence of the researcher on the research, and vice-versa, addressed? ☐ ☐ ☐ ☐

8. Are participants, and their voices, adequately represented? ☐ ☐ ☐ ☐

9. Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body? ☐ ☐ ☐ ☐

10. Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data? ☐ ☐ ☐ ☐

Overall appraisal: ☐ Include ☐ Exclude ☐ Seek further info. ☐

Comments (including reason for exclusion)

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MAStARI Appraisal instrument

### JBI Critical Appraisal Checklist for Randomised Control / Pseudo-randomised Trial

<table>
<thead>
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<th>No</th>
<th>Unclear</th>
<th>Not Applicable</th>
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<td>2. Were participants blinded to treatment allocation?</td>
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<td>3. Was allocation to treatment groups concealed from the allocator?</td>
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<td>4. Were the outcomes of people who withdrew described and included in the analysis?</td>
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<td>5. Were those assessing outcomes blind to the treatment allocation?</td>
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<td>6. Were the control and treatment groups comparable at entry?</td>
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<td>7. Were groups treated identically other than for the named interventions</td>
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<td>8. Were outcomes measured in the same way for all groups?</td>
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<td>9. Were outcomes measured in a reliable way?</td>
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<td>10. Was appropriate statistical analysis used?</td>
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**Overall appraisal:**
- Include □
- Exclude □
- Seek further info. □

**Comments (Including reason for exclusion)**

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JBI Critical Appraisal Checklist for Descriptive / Case Series

Reviewer __________________________ Date __________________________

Author __________________________ Year _______ Record Number _______

1. Was study based on a random or pseudo-random sample? ☐ ☐ ☐ ☐

2. Were the criteria for inclusion in the sample clearly defined? ☐ ☐ ☐ ☐

3. Were confounding factors identified and strategies to deal with them stated? ☐ ☐ ☐ ☐

4. Were outcomes assessed using objective criteria? ☐ ☐ ☐ ☐

5. If comparisons are being made, was there sufficient descriptions of the groups? ☐ ☐ ☐ ☐

6. Was follow up carried out over a sufficient time period? ☐ ☐ ☐ ☐

7. Were the outcomes of people who withdrew described and included in the analysis? ☐ ☐ ☐ ☐

8. Were outcomes measured in a reliable way? ☐ ☐ ☐ ☐

9. Was appropriate statistical analysis used? ☐ ☐ ☐ ☐

Overall appraisal: Include ☐ Exclude ☐ Seek further info ☐

Comments (Including reason for exclusion)

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**JBI Critical Appraisal Checklist for Comparable Cohort/Case Control**

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<td>3. Has bias been minimised in relation to selection of cases and of controls?</td>
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<td>4. Are confounding factors identified and strategies to deal with them stated?</td>
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<td>5. Are outcomes assessed using objective criteria?</td>
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<td>6. Was follow up carried out over a sufficient time period?</td>
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<td>8. Were outcomes measured in a reliable way?</td>
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<td>9. Was appropriate statistical analysis used?</td>
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Overall appraisal: Include □ Exclude □ Seek further info. □

Comments (Including reason for exclusion)

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Appendix II: Data extraction instruments

QARI data extraction instrument

**JBI QARI Data Extraction Form for Interpretive & Critical Research**

Reviewer  Date

Author  Year

Journal  Record Number

**Study Description**

Methodology

Method

Phenomena of interest

Setting

Geographical

Cultural

Participants

Data analysis

Authors Conclusions

Comments

Complete  Yes  No
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Extraction of findings complete: Yes □ No □
MAStARI data extraction instrument

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Authors Conclusions:

Reviewers Conclusions:
**Study results**

**Dichotomous data**

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**Continuous data**

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