

Developing strategies to deal with the multiple generational groupings within the tertiary classroom

Stephen Corich
Eastern Institute of Technology Hawke's Bay

scorich@eit.ac.nz

Abstract

The paper begins by looking at what the literature suggests are the differences in learning styles between the different generations that make up today's tertiary classrooms. The paper also examines the demographics of New Zealand's tertiary education sector in an attempt to identify the current and predicted future proportions of students within each of the generational groupings. The paper then presents the findings of two surveys; a student survey and a staff survey which were used to investigate the perceptions of current students and lecturers to the differences in learning styles of the different generational groupings. The paper concludes by considering some of the options available for dealing with multiple generations of students that make up the classrooms of today and the future.

Keywords: Computing education, learning styles, generational groups.

1 Introduction

In the first semester of 2007, the author, an ICT academic staff member at a regional institute of technology, taught a first year degree class which consisted of thirty three students, of which twelve (36%) were school leavers. The twelve school leavers were aged between 17 and 19 and as a group exhibited similar behavioural patterns and seemed to respond to particular teaching activities. The twelve younger students belong to the generation referred to as Generation Y, did not appear very receptive to the teaching methods that had been used successfully for previous iterations of the same class. While the older members of the class appeared happy to sit through interactive lectures lasting up to forty minutes, the Gen Y students quickly became unsettled and switched off when materials were reviewed more than once in a single lecture. The Gen Y students appeared to respond to short and intensive mini lectures lasting no more than 15 minutes and preferred to discuss topics online rather than face to face. It was interesting to note that while the Gen Y students appeared to reject teaching activities that had been adopted successfully by previous generations, the older students were happy with both the longer lecture

format and the formats used in an attempt to engage the younger students. The classroom observations are supported by Rose (2007) who suggests that as a group Generation Y students are tech savvy and that their love of technology allows them to adapt to technological advances of training design. Activities that the Gen Y students enjoy involve the use of e-learning technologies such as discussion forums, emailing and pod casting.

The difference in learning styles between generational groups has been the subject of educational researchers for some time. The arrival of Gen Y students at tertiary educational institutes has led to a growth in academic writings related to generational learning styles (Oblinger, 2003), (Ford, & Chen, 2001). Manuel (2002) suggest that Gen Y prefer visual and kinesthetic learning styles and that they have incredibly positive views of technologies' potentialities and their own abilities with technologies. Like all students, they learn more effectively when taught in accordance with their learning style preferences and when their worldviews are acknowledged.

Research conducted by the New Zealand Ministry of Education into the current and predicted future demographics for the tertiary education sector would suggest that the proportion of Generation Y students in the classroom is likely to remain relatively stable over the next five to ten years. The research also suggests that Generation Y students will form the majority of students in tertiary classrooms until around 2012. This would imply that academics teaching within the sector are going to have to develop techniques that allow them to deliver materials in a way that is acceptable to the multiple generations that they will most likely encounter.

This paper looks at the learning styles of generation Y students and compares them to the learning styles of the Baby Boomers and Generation X. The paper also investigates techniques that could help teachers, responsible for the delivery of information and communications technology, to engage and educate the students that they are responsible for. The paper reports on the responses from students and teachers at a regional institute of technology who were surveyed to establish their preferred methods of delivery and their attitudes to the increasing influence of generation Y students in the classroom. The paper concludes with the author's views on the importance of educators being able to change their delivery styles to meet the needs of the multiple generations that make up the classrooms of the tertiary education sector.

This Supplementary Proceedings paper appeared at the 21st Annual Conference of the National Advisory Committee on Computing Qualifications (NACCQ 2008), Auckland, New Zealand. Samuel Mann and Mike Lopez (Eds). Reproduction for academic, not-for profit purposes permitted provided this text is included. www.naccq.ac.nz

Table 1: Generational Characteristics and Learning Styles

Generation	Characteristics	Learning Style
Baby boomers	Idealistic Competitive Questioners of Authority Tend to be optimistic Like teamwork Tend to be self-centered Eager to put their own stamp on things	Like linear courses in which information is covered in a very logical, progressive manner. They struggle with simulations. They also accept objectives. If you tell them upfront what the course objectives are and what the training will cover, they are apt to accept what you say.
Generation X	Self-reliant Resourceful Distrustful of institutions Highly adaptive Skeptical Desire balance Enjoy informality Are technically savvy Respect is expected Career not most important thing Career hop to build skills Want immediate feedback	Appreciate new technology and expect a certain amount of interactivity. Like Boomers, they prefer linear content, but they also want to be able to "test out" of courses when they reach a point where their level of knowledge is sufficient. Those in this generation also want choices, such as being able to turn audio and closed-captioned text in a course on or off. They want you to teach them what they need to know and apply all the time. If there is something that they won't likely apply for another six months, they prefer not to receive training on it. They'd rather receive a performance support tool or job aid to which they can refer later.
Generation Y	Globally concerned Realistic Technological savvy Sociable Diverse Desire to achieve Environmentally conscious	The first thing they like to do in a course is take a test and figure out what they don't know. Then, they want to be able to go back in and learn what they don't. They also want to navigate through parts of a presentation in the order they prefer. Then, they want to have the option of researching references at their discretion. Likereal-world tasks. Like Ludic (Play) Behavior . Are Active & Kinesthetic or Graphic/Visual Learners. They are motivated by technology. They have a low threshold for boredom and short attention span. Desire for adults to act as their peers. Memorization - not something they will do.

2 Generational Learning Styles

The literature suggests that for some time educators have been aware that different people have different dispositions towards learning (Felder & Silverman, 1998). The different dispositions are referred to as learning styles, which form a student's unique learning preference and aid teachers in the planning of teaching delivery methods (Kemp, Morrison & Ross, 1998). Many leaning style models have been developed. The different models consist of between two and seven different learning style categories. One of the most commonly used models, proposed by Gardner (1985), has three broad learning style categories; auditory, kinesthetic and visual. The proponents of learning styles suggest that teachers should assess the learning styles of their students and adapt their classroom methods to best fit each student's learning style. While proving to be a popular approach among educators, there many who are critical of learning style approach. Coffield, Moseley, Hall & Ecclestone (1994) suggest that most of the popular learning style theories have not been adequately validated through

independent research and that the value of matching teaching and learning styles is at best questionabale.

While the idea of tailoring teaching to the learning style of the audience has been around since the early 1970s, the concept of categorising learning styles to different generations of students is a more recent development. Cambiano, De Vore & Harvey (2001) identify five generational groupings:

- Traditionalists: 1922 – 1943 (over 65)
- Baby Boomers: 1944 – 1964 (44 – 64)
- Generation X: 1965 – 1977 (31 – 43)
- Generation Y: 1978 – 1994 (14 – 30)
- Generation Z: 1995 - ? (Under 14)

The demographics of tertiary educational institutes in New Zealand would suggest that the majority of students will lie within the Baby Boomer, Generation X and Generation Y categories. Liska (2005) and Boehle (2008) have identified a number of characteristics and learning style preferences for each of the three groups. Table 1, summarises their findings.

Learning style supporters would suggest that teaching strategies that best support the generational group being taught should be adopted. However the demographics of the tertiary education sector would suggest that for some time to come; most classes are likely to include representatives from all three groups. This would imply that a selection of strategies should be adopted, however as Boehle (2008) points out, there are some additional aspects of the multi-generational environment that must be kept in mind. Perhaps the most important being, that there are exceptions to the rules and not all learners in a generational group are the same. Boehle (2008) also points out that learning styles are upwardly compatible by one generation but not necessarily downwardly compatible. Generation X learners are likely to be happy to adopt strategies aimed at engaging Generation Y learners, while the reverse is not necessarily true.

3 New Zealand Tertiary Educational Institute Age Demographics

In 2006 the Ministry of Education commissioned a study to look at the impact of demographic change on aspects of the tertiary student population and its network of provision. The report entitled “A changing population and the New Zealand tertiary education sector” was written by Jason McClelland, a senior research analyst with the Tertiary Sector Performance Analysis & Reporting, Ministry of Education. The report used a forecasting model to estimate the numbers of New Zealanders aged 15 years and over who will be engaging in tertiary education over the medium-term period from 2005 to 2021. Table T1 of the report (page 35) which shows the domestic tertiary students (percentages) by selected age groupings, 1999 to 2005 (actual) and 2006 to 2021 (projected) was used to calculate the percentages of students belonging to each of the generational groups identified in the introduction of this paper. Table 1 shows the projected percentages for each generational grouping from 2007 to 2012.

Table 2: Percentages of Students in Generational Groupings

	2007	2008	2009	2010	2011	2012
Gen Y	50	50	50	51	51	52
Gen X	38	38	38	36	36	35
Baby Boomers	12	12	12	13	13	13

The table suggests that the current percentages of generational groupings is likely to remain relatively static for the next five years with GenY students accounting for more than half of the class populations.

4 Methodology

The research methodology adopted for this paper included a review of current literature into the different learning styles of the multiple generations found in the tertiary educational institutes and surveys of students and

teaching staff at a regional institute of technology. The student survey attempted to identify the preferred learning styles of the different generational groupings and the attitudes towards the growing influence of Generation Y students. The teaching staff survey attempted to identify techniques being used to cope with the different generational groupings and their attitudes towards teaching in the multi-generational classrooms of today.

The student survey was developed following the literature review and sought to establish if the learning styles identified for each generational grouping identified from the literature was evident with the student groupings. The survey gathered demographic data which enabled students to be classified into generational groupings and the learning styles for each group were compared to those identified in the literature. The student survey also attempted to identify if there is any friction created by different learning styles associated with each generational grouping.

The student survey instrument was checked for validity, peer reviewed and tested by three students, one from each of the identified generational groups. Following a number of minor changes the survey was given to a second year ICT degree class which consisted of 20 students of varying ages. Eighteen of the twenty students completed the survey.

The teacher survey attempted to identify if teachers were aware of any differences in learning styles that could be attributed to the generational groupings. The teacher survey sought to identify any particular teaching strategies were being used to target the learning styles for generational groups. The teacher survey also sought to identify if teachers had problems delivering materials to a particular generational group and if they had noticed any friction between the different groups.

The teacher survey instrument was also checked for validity, peer reviewed and tested by a teaching colleague and following a number of small changes the survey was given to twelve ICT academic staff. All staff completed the survey.

It should be noted that the samples used in the surveys were both audiences of convenience and relate to a particular group of students and teachers. The findings while being similar to those presented by earlier researchers, should not be used to generalize the opinions of students and teachers across the New Zealand tertiary educational sector.

5 Findings – Student Survey

Students from all three generational groups described in the table responded to the survey. While they were not all conversant with learning style theory, they were able to identify their preferred methods of delivery. Table 3 identifies the number of students belonging to each generational group and their preferred methods of teaching material delivery.

The findings are similar to those identified from the review of the literature. Each of the three groups did have identifiable preferred styles of learning and the styles

differed from group to group. The only activities that were common to all three groups involved the use of technology in the classroom. All three groups identified the use of technology as an essential component of effective teaching. This is most likely explained by the fact that all the students were enrolled in a computing degree and have made a decision to seek employment in the technology field.

Table 3: Students Perceptions of Preferred Learning Approaches of Students

No	Generation	Preferred method of delivery
2	Baby Boomers	Objectives explained Logical progression of lesson Support materials on line Opportunities to review Teamwork
8	Gen X	Identify what is necessary to know Clear directions Support materials on line Relate to real life situations Interactive lessons Flexible delivery options
8	Gen Y	Short lectures Practical rather than theory Support materials on line Quizzes and mini tests Employment related skills

When asked if they had identified any friction resulting from the different learning styles associated with each generational grouping, the only group to identify an area of concern was the Generation X group, who claimed that the perceived short attention spans of the Generation Y students meant that they easily became distracted and as a result often disrupted the learning of other class members.

6 Findings – Staff Survey

Of the twelve responses, 11 staff indicated that they were aware of the differences in generational learning styles. Ten staff were able to identify different activities relating to each of the generational groupings. Table 4 summarises the differences identified between the generational groupings.

The preferred methods of delivery for each of the generational groupings identified by the staff reinforce the literature findings and are similar to those that students identified. It was pleasing to note that staff are aware of the differences in learning styles and are able to articulate the differences.

When asked if they paid attention to intergenerational issues when planning lesson delivery, 8 indicated that they did and 4 indicated that they did not. Since a third of the staff indicated that they ignored the differences in learning styles of the generational grouping when developing teaching materials, it may be an area where professional development is required.

Table 4: Staff perceptions of Preferred Learning Approaches of Students

Generation	Preferred method of delivery
Baby Boomers	Like printed materials Happy to ask questions Prefer written instructions Lack confidence Want to improve skills Look for work related training Interested in philosophical matters Prefer structured delivery
Gen X	Often arrive with technical skills Confident Looking for vocational skills Juggle family commitments Ask for flexible delivery options Happy to investigate on their own
Gen Y	Prefer fast and furious delivery Want employment related skills Often ignore instructions Happy to read online Want flexible delivery Short attention span Happy to experiment with software Often looking for shortcuts

When asked to identify what techniques were used to make the teaching environment more engaging, half of the staff surveyed were able to give practical examples. The activities suggested included the following:

- Using visual metaphors
- Provide materials specific to each group
- Using language appropriate to each group
- Varying delivery methods
- Using graphics in support materials
- Provide items of intellectual interest for mature students
- Adding audio to online presentations
- Supply materials in different formats (paper, electronic, audio, visual)
- Provide formative assessment opportunities
- Allow students to work at their own pace
- Try to make materials interactive
- Provide opportunities for web based research
- Incorporate online learning activities
- Add extra materials such as online crosswords and quizzes
- Increase the use of group work
- Use Internet to create research activities based

7 Discussion and Conclusions

The paper presents the views of a small sample of the IT component of the tertiary education sector in New Zealand and could be expanded to include a sample that better represents the New Zealand tertiary sector.

The literature indicates that different generations have different learning styles and that teaching materials and delivery should be designed with the differences in mind. The survey results of students and staff, which represent the thoughts of IT students in a regional institute of technology, indicate that both students and staff are aware of the differences and understand that effective teaching will be more likely to occur when the teaching activities are specifically designed to cater for the differences in learning styles.

The demographic predications for tertiary educational institutes indicate that teachers will have to teach classes that contain a mix of generations for some time to come and teachers will have to find ways to cater for the different generations when creating teaching materials. Perhaps the easiest way to satisfy the different students groups is to offer a variety of teaching materials and delivery methods.

Technology can provide a useful tool to deal with the problems associated with generational differences. Materials can be delivered both face to face and electronically. Opportunities exist to create media rich presentations and activities which could be used to engage students. Technology could also be used to provide an environment where the learning environment adapts to the individual needs of students.

Teachers should be aware that there are differences in the learning style preferences of different generations and should attempt to provide materials that are engaging and interesting. The days of the sage on the stage have gone and the teacher has to play to role of the guide on the side.

Perhaps flexible delivery offers a partial solution to teaching multi generational classes. Flexible delivery allows teachers to provide a variety of delivery options, providing students the opportunity to select the delivery option that best suits their learning style.

In closing, we should be mindful of the words of John Dewey (1916), an early twentieth century American philosopher, psychologist, and educational reformer who once said:

"If we continue to teach our students today, as we taught them yesterday, we rob them of tomorrow."

As educators we have a responsibility to ensure that our teaching practices remain up to date and that we are aware of current best educational practice. As educators we need to be aware of the different learning styles and the need to use a variety of ways engage our students.

The classroom will always have learners from different backgrounds and different learning styles and which should impact on the way that we teach.

8 References

Boehle, S. 2008. How to Design E-Learning for Multiple Generations. *Manage Smarter Web Site*. Retrieved 13 March, 2008 from http://www.managesmarter.com/msg/content_display/training/e3ifd9d309a05210550829851b903c9b630.

Cambiano, R. L., De Vore, J.B., Harvey, R, L. 2001. Learning Style Preferences of the Cohorts: Generation X, Baby Boomers, and the Silent Generation. *APAACE Journal of Adult Learning*, v10 p31-39.

Coffield, F., Moseley, D., Hall, E., Ecclestone, K. (2004). *Learning styles and pedagogy in post-16 learning. A systematic and critical review*. London: Learning and Skills Research Centre. Retrieved 13 March, 2008 from <http://www.lsda.org.uk/files/PDF/1543.pdf>.

Dewey, J. (1916). *Democracy and education*. Englewood Cliffs, NJ: Prentice Hall.

Felder, R.M. & Silverman, L.K. 1998. Learning and Teaching Styles in Engineering Education. *Engineering Education*, 78(7), 674-681 .

Ford, N. & Chen, S. Y. 2001. Matching/mismatching revisited: an empirical study of learning and teaching styles. *British Journal of Educational Technology* 32 (1) , 5-22, January 2001.

Gardner, H. (1985). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books Inc.

Kemp, J. E., Morrison, G. R., & Ross, S. M. (1998). *Designing effective instruction (2nd ed.)*. Upper Saddle River, NJ.

Liska, R. 2005. Generational Learning Styles: Predicting program trends. *AIA/CES Providers Conference, May 17 & 18, 2005*.

Manuel, K. 2002. Teaching Information Literacy to Generation Y. *Journal of Library Administration*, v36, p195-217.

McClelland, J. (2006). *A changing population and the New Zealand tertiary education sector*. Ministry of Education.

Oblinger, D. 2003. Boomers, Gen-Xers, and Millennials: Understanding the "New Students." *EDUCAUSE Review*, v38, p36-40, Jul-Aug 200.

Rose, J. 2007. Designing Training for Gen Y Learning Style and Values of Generation Y. *Suite 101.Com*. April 14 2007. Retrieved 13 February 2008 from http://trainingpd.suite101.com/article.cfm/designing_training_for_gen_y.

Instructional Technology Research in New Zealand: a 5-year Review

Dr Kay Fielden

United New Zealand

kfielden@unitec.ac.nz

Abstract

This paper examines trends in instructional technology research over the 5-year period 2004 - 2008. One hundred and eleven papers were selected from this research domain. These papers were further analysed by categorising the papers by research method utilised, data gathering techniques employed, institutions from which the authors were researching, the extent to which collaboration occurs in internet technology and peer review processes utilised. The quality of the research being conducted was also assessed, by considering sample size, duration of research projects, level of critical reflection achieved.

It was also evident from the papers selected for this literature review that the changes in the tertiary funding model adopted by the New Zealand government has had an affect on the number of research papers being produced, the peaks in research paper publication dates and the ways in which information technology is being researched.

1 Introduction

In this paper trends in instructional technology research over the 5-year period 2004-2008 were examined.

The structure of the paper is as follows: first the method used for this literature review is described. This is followed by a scoping section. Analysis of each category area is provided, and findings presented on the trends evident in this selection of papers.

2 Method

In this literature review, papers selected by research methods students for their first assignment were amalgamated, duplicates removed, and the Endnote file cleaned up. These papers were then grouped according to year of publication, number of authors contributing to each paper, topic area and type of publication (conference, journal or report). Articles were also categorised into international, Australian or New Zealand publications. Each category has been analysed within these categories.

This supplementary proceedings paper appeared at the 21st Annual Conference of the National Advisory Committee on Computing Qualifications (NACCQ 2008), Auckland, New Zealand. Samuel Mann and Mike Lopez (Eds). Reproduction for academic, not-for profit purposes permitted provided this text is included. www.naccq.ac.nz

2.1 Scope

In this literature review of 111 articles in instructional technology research the following topics shown in Table 1 were evident: collaboration/online discussion, distance education, E-assessment, E-institution, E-learning, E-teaching, IT course content, IT tools, mixed mode delivery, M-learning, professional development/training, personality types, politics, futures/strategy, simulation/gaming, staff adoption of e-learning, and theoretical modelling. More research is conducted in E-learning than any other topic area in computer science research education in this particular sample.

Table 1: Literature Scope

Topic	Authors	No
Collaboration Online discussion	(Avdjieva, et al, 2005); Allan, 2004; Anderson, 2004; Bowker & Tuffin, 2004; Chamberlain & Rayner, 2005; Goodman, 2007; Novak et al, 2007)	7
Distance ed	Bunn, 2004	1
Eassessment	Campbell, 2005	1
E-institution	(Johnson et al, 2005; Kwok-wing & Pratt, 2004; Bhattacharya et al 2007; Rajasingham, 2005; Tyler-Smith, 2006)	5
E learning	(Al-Dujaily & Ryu, 2006; Avdjieva et al., 2005; Bunn, 2004; Cochrane, 2005a; Doherty et al., 2007; Elgort, 2005; Eustace, 2004; Giddings et al, 2006; Ham & Davey, 2005; Hart, 2005; Ip & Morrison, 2005; Jeffrey et al, 2006; Jiramahapoka, 2005; Koloto, et al, 2006; McGregor et al, 2006; McSporrان, 2004; Middleton, 2005; Milne et al., 2007; Mimirinis & Bhattacharya, 2007; Minedu, 2004; Neilson, 2007; Patterson & Davis, 2007; Pauleen, Marshall, & Egort, 2004; K. Petrova & Sinclair, 2005; Shukla & Koh, 2004; Smith, 2004; Street et al., 2007; Wells & Brook, 2004; Yongqing, Warwick, & al., 2006; Young & McSporrان, 2004)	29
Eteaching	(Maet al, 2007; Plimmer & Amor, 2006; Potgieter, 2004; University, 2004; Upton & Cooper, 2006; Verhaart, 2007; Ward & Parr, 2006; Wilson, 2004; M. Winter, 2004; Young & McSporrان, 2004; Zakharov, et al, 2007; Zhang & Heinrich, 2005)	12
IT Course Content	(De Raadt, et al, 2004; Hoffmann, 2004; Latu & Young, 2004; Purvis, et al, 2004)	4
IT Tools	(Bell, et al, 2007; Brook & Gasson, 2007; Cochrane, 2005b; Corich, 2005; Elgort, et al, 2008; Hughes, 2005; Koh, 2004; Komisarczuk & Welch, 2006; Mitrovic, et al, 2004; Moyle & Cockburn, 2007; Plimmer & Mason, 2006; Rudsar, et al, 2006; S. Stewart, 2006; Stewart, 2007; Ursula, 2005; Vasilakos, et al, 2004)	15
Lit review	(Collecutt, et al, 2006)	1