

The school library leading the way: Providing information literacy professional development for teachers

Elizabeth Probert
Lecturer
The University of Auckland
New Zealand

In 2007 the principals of three schools in Auckland, New Zealand, formed a cluster with the aim of improving standards of information literacy in their schools over three years. Research, reported in a paper at the 2008 IASL conference, demonstrated that few teachers in the cluster were explicitly teaching their students the skills they needed when undertaking research or inquiry. In early 2008, a group of Lead Teachers, led by the teacher librarian in the largest school, and including trained library staff, designed a cluster model for teachers to use with their students when processing information. They also designed cluster-wide professional development which each school implemented in different ways. This paper reports on the findings of an evaluation carried out to measure the effectiveness of the first round of professional development.

Information literacy; professional development; lifelong learning

Introduction

This paper reports on one section of my doctoral research project. It is the story of three Auckland, New Zealand schools which formed a cluster, submitted a proposal and gained funding for four years from the Ministry of Education Extending High Standards Across Schools (EHSAS) project. Their focus, as stated in their proposal, includes empowering students to become independent learners by placing the learner at the centre of the educational process; developing school-wide information literacy processes and extending creative and critical thinking skills. To start this process, a group of Lead Teachers from each school, led by the Teacher Librarian at the largest school, formed a team to design ways to achieve this aim. I became involved in the project when I was asked to carry out research evaluating the effectiveness of the professional learning they planned to design and implement. This is the story of the teachers over the first 18 months of the project and includes the gathering of the baseline data in 2007 on which the Lead Team would base their professional learning interventions; the effectiveness of that first occurrence, measured at the end of 2008; and then a more detailed description of the designing and implementation of the intervention.

Background information

Over recent years the need to develop lifelong learners has been acknowledged in a number of countries. This expressed need (Ministry of Economic Development, 1999; Tuschling & Engemann, 2006; World Bank Group, 2003) is associated with the global move to knowledge economies and societies. Much of this movement is due to the crucial role

played by information and communications technologies (ICT), in a post industrial-age world. The “growth of the Internet and other related new technologies has become the catalyst for the creation of knowledge economies” in countries such as USA, Australia, the United Kingdom, Canada, Finland and Ireland, according to the New Zealand Ministry of Economic Development (1999) which also states that “ICTs are the enablers of change” (p. 10). Such developments are “largely due to technological change, the speed at which knowledge is created, accumulated (and perhaps depreciates) in terms of economic relevance and value” (David & Foray, 2003, p. 21).

Lifelong learning. The development of such a knowledge society and economy is a stated goal of the New Zealand government (Ministry of Economic Development, 1999) and of the Ministry of Education (Ministry of Education, 2006) in a report stressing the importance of education and lifelong learning education in the development of a knowledge economy. Such an economy will allow students to “continue learning throughout life” (Ministry of Education, 1993), becoming “lifelong learners”, “active seekers, users and creators of knowledge” according to the *New Zealand Curriculum* (Brown, 1999; Ministry of Education, 2007, p. 8).

The literature concerning lifelong learning emphasises the pivotal role played by information literacy in such development. When assessing the characteristics of lifelong learners, de la Harpe & Radloff (2000) describe a number of information literacy strategies as well as other skills that students need to develop in order to become effective learners. Schools which already have a focus on lifelong learning have a strong focus on information literacy development (Bryce & Withers, 2003). An information literate person is able to locate, evaluate, use and disseminate information, using a wide variety of resources including print, ICT, people and visual images. Such information processing activity is a highly complex procedure, incorporating affective, behavioural and cognitive experiences not just sets of skills (Kuhlthau, Maniotes, & Caspari, 2007). Members of a knowledge society as Hargreaves (2003) noted, “process information and knowledge in ways that maximise learning, stimulate ingenuity and invention and develop capacity to initiate and cope with change” (p. 3).

Defining information literacy. The term ‘information literacy’, however, is problematic. To some it seems to mean, implicitly, everything involved in processing information including cognitive, affective, behavioural and pedagogical factors as well as skill development. Many in the library field, for example, appear to see ‘information literacy’ as mainly related to locating and evaluating information. The term ‘use’ in the tertiary sector seems to refer to the narrower sense of ‘assessing the relevance’ (Australian School Library Association, 2001) of information found. In the compulsory school sector though, the term includes a wider range of skills and attitudes, more akin to ‘making active use’ of information including organizing, note taking, processing, synthesis and communication and presentation of findings and solutions (American Library Association, 1998). Others refer to information literacy but on closer examination, it becomes clear they are referring to information and communications technologies (ICT).

One definition which a number of organizations refer to is the American Library Association (ALA) definition of information literacy:

To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed

information. Information literate people are those who have learned how to learn. (American Library Association, 1998)

The EHSAS cluster has explained information literacy to staff and students as a “broad concept that embraces information skills, ICT skills and library skills along with the problem-solving and cognitive skills, and the attitudes and values that enable learners to function effectively in the information landscape” (Ministry of Education and National Library of New Zealand, 2002).

The New Zealand situation. There is evidence, however, that many New Zealand students lack these skills and attributes. The New Zealand National Education Monitoring Project (NEMP) began in 1993 to assess and report on the achievement of Years 4 and 8 primary school students in New Zealand across all areas of the curriculum. Information skills were tested in 1997, 2001 and 2005 and analysis of the results found that there was little evidence of change in the ability of year 4 and year 8 students to find and gather information between 1997 and 2005 (Flockton & Crooks, 1998; Flockton, Crooks, & Baker, 2002; Flockton, Crooks, & White, 2006). The Education Review Office (ERO) report, *Student learning in the information landscape* (Education Review Office, 2005), provides more evidence of students’ lack of information literacy development. ERO visited almost 400 schools in late 2004 and early 2005 and found that information literacy is not well developed in most schools and particularly not in secondary schools, with little evidence that schools were systematically implementing an information processing model across the curriculum. Hipkins (Hipkins, Conner, & Neill, 2006), interviewing secondary school students about their research procedures, found these appeared to consist mainly of the “retrieval and repackaging of information”. She emphasises the need for students to develop the skills which will instead allow them to find, evaluate and process information, to become effective lifelong learners. More recent findings (Hipkins, Cowie, Boyde, & McGee, 2008) notes that many schools are using inquiry models but with varied success. The report warns of the urgent need to provide professional development for teachers.

Methodology

Context

This is a work in progress involving staff and students at a cluster of three schools in Auckland. The whole project comprises a three phase, mixed method, quasi-experimental design, involving pre-test data gathering, the implementation of an intervention and then the gathering of post-test data involving students and teachers. This paper reports on findings from the teacher questionnaires completed at the end of 2007 and 2008 and from teacher and Lead Teacher interviews conducted in February 2008 and up until April, 2009.

Participants

A Intermediate school Y7-8	Decile 9
B State girls’ school Y9-13	Decile 5
C Integrated girls’ school Y7-13	Decile 5

In the New Zealand school system, students start primary school at five years of age or Year 1. At 11 years of age, most students attend an intermediate school (Years 7 and 8)

and then move to secondary schooling at Year 9 (13 years of age). The final year of secondary school is Year 13. The New Zealand Ministry of Education also uses a *decile rating system* for school funding purposes. Each decile contains approximately 10% of schools. Schools in decile one have the highest proportion of students from low socio-economic backgrounds. Schools in decile ten have the lowest proportions of these students. (Ministry of Education, 2006).

Data collection

Questionnaires. The web-based anonymous questionnaire used Likert-type questions designed to explore frequency and attitude. There were also six open-ended questions. The aim was to obtain a picture of teachers' current understanding and practice of information literacy. The findings provided the basis for designing the professional development delivered during the second and third terms of 2008 and again during 2009 and beyond. The questionnaire was used again at the end of 2008 to gauge the effectiveness of the first round of professional development delivered during 2008.

Interviews. In late 2007, ten Heads of Departments (HoDs), including English, Science, Mathematics, Social Sciences and Technology in the secondary schools and five Team Leaders in School A were interviewed. During the semi-structured interviews, they were asked to describe an information literate person, to describe how they went about teaching various skills such as note taking and website searching, and about departmental policies relating to the teaching of information skills. The Lead Teachers from each school were interviewed twice during 2008. (*Insert Table 1 here*)

Results and discussion of baseline data collection pre intervention 2007 and data collection post intervention 2008

There was a good response rate to the teacher questionnaire gathering baseline data in 2007, with 148 responses from a total of 200 (74%) teachers at the three schools (25 teachers from School A; 76 from School B and 47 from School C). Anecdotal evidence demonstrated strong support for the use of online questionnaires. Teachers commented on the convenience factor. All teachers in New Zealand are issued with laptops, many schools have wireless connections and so staff were able to complete the questionnaire whenever and wherever they found time. Other comments included "*I have lost some skills in writing for any time with a pen rather than with a keyboard*" and that I "*may have given much shorter answers if completing a conventional hard copy questionnaire*". Most of those who did not respond taught at School B. Fewer teachers responded to the 2008 questionnaire. Teachers from School C are not included in the analysis of the results of the two occurrences of the questionnaires as the professional development there was carried out with only a few teachers in 2008. In all, 88 or 70% of teachers from the two schools responded in 2008, 20 from School A and 68 from School B.

The questionnaire included 27 questions designed to investigate teachers' understanding of information literacy and their classroom practice. Questions included queries about understandings of information literacy skills and library skills; the need to teach information literacy skills explicitly; the use of online resources and books; assessment of

students' skill levels; the need for information literacy skills; the use of and description of information processing models and modelling and teaching of various skills.

Because the teachers in 2007 had insisted that there be no possible way to identify them and because not all the same teachers who participated in 2007 did so in 2008, it was not possible to obtain paired samples, necessary, for example, to use for the paired samples t-test. It was therefore decided to use the Mann-Whitney test, a non-parametric equivalent of the independent t-test. Some significant change (*insert Tables 2 & 3 here*) in Schools A and B findings was revealed in the 2008 responses to nine of the 27 questions in the questionnaire. These were concerned with the understanding of information literacy, the place of ICT and with some areas of classroom practice such as use and knowledge of an information processing model. The mean ranks were significantly higher in 2008 in five of the questions and significantly lower in two questions (13 and 24) where the Likert Scale was reversed. Two other questions (19 and 34) revealed negative change.

Question 10: How would you describe an information literate person? Schools A and B. Questionnaire responses: Keyword vocabulary and terms relating to the chosen definition, explanations and models were processed using SPSS. In School A in 2007, only 3% demonstrated a very good understanding with the remaining replies showing little or no understanding. In 2008, 19% of respondents from that school saw information literacy and ICT as the same thing while 24% demonstrated a very good understanding. Of School B participants in 2007, 38% had limited understanding, 18% understood information literacy the same as ICT and only 2% demonstrated a very good understanding. The remainder either did not respond or gave irrelevant replies. In 2008 18% showed a limited understanding, 16% still saw information literacy as ICT but 30% now demonstrated a good understanding of information literacy.

Interview responses. It was found during the interviews that several of the HODs and Team Leaders gave more detailed and accurate responses than were apparent from the questionnaire responses (Elbaz, 1981). Two Team Leaders from School A emphasised the importance of recognising the need for information and *'articulating what it is they want to find*. When asked to describe how they taught various skills such as note taking or website evaluation, most of those interviewed were not able to describe any methods of teaching these skills and five secondary HoDs from Schools B and C, after several minutes of thought, stated that they expected the students to already have such skills so did not teach them. All those interviewed thought information literacy development was very important. *"I think there's too much information out there and they just don't know how to access it effectively, otherwise it's too overwhelming for them"*. HoDs and Team Leaders from Schools A and B who were re-interviewed towards the end of 2008, reported that they found the strategies the Lead Teachers provided were very useful and that they appreciated having a well defined model to use. They were also appreciative of the posters supplied for classroom display and most emphasised the importance of all teachers using the same model. One person stated that *"it made life so much easier and students were starting to get familiar with the process in other classrooms as well."* Teachers at School A held staff meetings during which they visited classrooms and the teacher from that room enthusiastically described the *"exciting progress"* her students were making. Other comments included *"It is great to see what others are doing too"*, *"I feel we are all going the same way"* and *"I hadn't really realised about explicit skills teaching before"*.

Question 13: Information literacy is mostly concerned with ICT (Reverse). Schools A and B. In 2007, over half (52%) of the teachers from School A agreed that information literacy was

mainly concerned with ICT whereas in 2008 10% held this view. This again appears to reflect the results of the professional development which, according to the Lead Teacher, tried to demonstrate that although ICT was very important, and its use had been the focus of previous professional development, that *"many of the attributes of an information literate person were not to do with the use of ICT"*. At School B, 52% disagreed with the statement in 2007 while 84% did so in 2008. As with School A, the professional development sessions appeared to have helped more teachers to reverse their previous opinions.

Question 19: Information literacy skills are only needed when student are completing a research assignment (Reverse). School B only. While the analysis of the response to this question demonstrates change, the change is unexpectedly negative and could be due to the emphasis in the professional development sessions on an information processing model closely associated with research. Perhaps teachers have lost sight of the need for a wider use for information literacy skills apart from use in research assignments.

Question 24: Information literacy skills will develop naturally without explicit teaching (Reverse). School A only. This was an interesting result and reflects the teachers' growing understanding of information literacy skills development. The Lead Teacher when interviewed had commented that *"it was good to see [mostly very young] teachers starting to think about skill development"*. It was curious though, that responses to another question, *Q12: Information skills need to be explicitly taught*, did not reveal any significant change.

Question 25: I use an information processing model with my students. School B. The increased use of a model by one school only (B) could be explained by the fact that School A in 2007 was already using a model, although not the cluster *i-lit* model.

Question 26: The name of the model is... Schools A and B
Question 27: The stages of the model are... Schools A and B
In School A in 2007, 28% of participants named a known model and 11% supplied details while in 2008 69% could name a known model and 46% could give details of the model. In School B in 2007, 30% of participants said they used a model but only 10% named a known model and 3% gave details. In 2008, 47% said they used a model, 30% named a known model and 27% could supply details. A number of commonly used models were referred to in the questionnaire both in 2007 and 2008 to jog teachers' memories. None of the HoDs interviewed in early 2008, could describe an information processing model although most said they would welcome the introduction of a school-wide model.

Question 34: I model methods of finding information in books with my classes. School A. Although analysis of responses to this question indicates change, the change is unexpectedly negative in that fewer respondents appear to model finding information in books. There has been an emphasis on ICT development in this school which might account for less focus on information from books. There was not a corresponding increase in those modelling the use of online information at this school.

Question 35: I model methods of finding information using online resources with my classes. School B only. Responses appear to reflect the emphasis placed on the increased use of online resources during the professional development sessions. There had previously been little use of online resources, according to interviews with HoDs, who felt many teachers had lacked the confidence to use online materials with their classes.

Summary

While these changes may seem few, the Lead Teachers were very encouraged. Some results have caused them to rethink the focus of professional development sessions. This could include stronger linking of the need for information literacy development to lifelong learning rather than to research assignment needs only. The Team Leaders and Librarian also see a need for a focus on using books as information sources as well as online resources. The fact that no significance change was seen in responses to the other 18 questions, which included queries about teachers' expectations of students and beliefs about the teaching and modelling of various skills, emphasised for the Lead Teachers that changing teacher understandings and practice will take some time and much effort (Black & William, 1998; Timperley, Wilson, Barrar, & Fung, 2007). Further professional development and support are planned to continue during 2009 and beyond.

Designing the intervention

The intervention comprised the introduction of a cluster-wide model, accompanying professional development and supporting documentation. The Lead Teachers, led by the Teacher Librarian in School B (who has since left the school), spent some time investigating the literature surrounding professional development and exploring reports on effective professional development. In particular they aimed to address the 'black box', found between acts of teaching and what students learn (Black & William, 1998). They were also interested in the second 'black box', between teacher professional learning opportunities and teacher outcomes, such as changes in practice or no change in practice (Timperley et al., 2007). Other issues they addressed included acknowledging the importance of engaging teachers' prior knowledge (Robinson & Lai, 2006), providing extended (as opposed to one-off) opportunities to learn, and the conditions needed for creating effective extended learning (Knapp, 2003; Parr, Timperley, Reddish, Jesson, & Adams, 2006). Another finding the Lead Teachers discussed was the need to create dissonance, thus "challenging tacit knowledge, (Parr et al., 2006) creating philosophical tension and requiring current knowledge to be reconstructed" (Hannay & Ross, 2001).

They also investigated a number of information processing models before deciding to design their own cluster model, *i-Lit*, based on AIM, the Alberta Information Model (Alberta Education, 2004). The Lead Teacher in School C described the process as follows:

AIM exemplifies the "Teaching as Inquiry" approach which is expected of New Zealand teachers. Alberta Education reviewed their 1990 Focus to include new evidence on effective pedagogies, the implications of technology and the work of researchers such as Kuhlthau (Alberta Education, 2004, p. 7). The central piece of the circular jigsaw presentation of the AIM model, Reflecting on the process, fitted well with the cluster's beliefs that metacognition underpins information literacy. It was felt that the model's circular nature would enhance student and teacher understanding of the non-linear nature of the inquiry process. Each stage of the *i-Lit* model has a Teacher Focus, which covers Reflective planning questions, Explicit teaching and modelling of strategies, a Toolkit, and a Student Focus, which contains Focus questions and Reflective questions. (Lead Teacher, School C. Personal communication, April, 2009)

The same Lead Teacher (School C) also created a cluster wiki in 2008 which contains all meeting minutes, discussions of the model design and decisions on teaching strategies. Once the model design was finalised, after at least ten drafts, the Lead Teachers decided upon strategies to help teachers introduce the model and teach information literacy skills. These resources have also been uploaded to the wiki site and will be widely available to all staff later in the year. Such resources include various note taking methods and templates, and booklets that teachers can use with students. Posters for use in classrooms have also been designed as have pamphlets to distribute to parents for their information. Parent evenings to further explain the model are also planned during 2009 and 2010. All homework notebooks used by cluster students will contain information about the model and the process from 2010. The Lead Teachers have stated that by involving teachers, students and parents, they are hoping eventually to create an information literate school community (Henri, 1999) with a focus on developing lifelong learners.

Delivery of professional development

The professional development was delivered differently at each school.

- School A: The Lead Teacher in 2008 was new to the school and had much catching up to do.
 - She held whole staff meetings at the end of Term One and small work shops in Term 2.
 - She also had time allowance to go into classrooms to help teachers which proved very successful and has added supporting materials to the school's KnowledgeNet website.
- School B: The Lead Teacher (Teacher Librarian) at this school explained that they aimed to involve the whole staff rather than starting with one or two departments. This had occurred before and proved unsuccessful as the departments initially involved tended to drop out and the whole school focus was lost.
 - Professional development was delivered once a week early in the morning. Students arrived later on those days. The sessions were lead by the teacher librarian who decided to teach one stage at a time.
 - The most difficult stage proved to be the Defining stage. Teachers had previously identified the worst question they were asked by students to be "What are we supposed to be doing?" The Teacher Librarian tried to get teachers to understand that working on this stage would help them with students trying to understand the task.
- School C: Only six Social Studies and six English teachers received professional development in 2008.
 - They trialled the professional development and the process with a small number of teachers from Social Studies and English in order to refine the professional development before involving all the staff.
 - The Lead Teachers modelled the strategies for the model. Teachers then worked with their classes on the strategies, after which there was a feedback session led by the Lead Teachers.
 - Other teachers started receiving professional development in 2009 and it is planned to involve all staff by 2010.
 - The library manager is very involved in the professional development, working with teachers and students. One Lead Teacher commented that "*it's invaluable having our [librarian] working with teachers*".

- The main Lead Teacher at this school set up the cluster wiki.

Progress in 2009

Now that the professional development is underway, and continuing through 2009, attention has turned to student outcomes. Several classes of students, new to each school, have completed hard copy, numbered, questionnaires in February, 2009. Focus groups have also been held with participants from each class. This procedure will be repeated at the end of the year after students have completed assignments using the cluster information processing model *iLit* taught by teachers who have undertaken the professional development. Further statistical analysis will then be carried out to measure change. Lead Teachers delivering the professional development will also be re-interviewed about the process. Urged on by the teacher librarian, they have also attended seminars around *Guided Inquiry* and are looking to include such aspects as the zone of intervention and the School Library Impact Measure (SLIM) (Todd & Kuhlthau, 2005) in their current model.

Limitations of the project

- Online questionnaire: It was decided to accept the Faculty of Education invitation to use their newly set up web survey design service, partly for convenience but also as data storage on campus seemed a more secure option than using a service such as *surveymonkey.com*. However there were unexpected problems to be surmounted when the webmaster involved was seconded to work on the University of Auckland's new website for some months.
- The teachers' insistence at one school in particular at not being identified in any way at all caused a problem when attempting to carry out statistical testing as it was not possible to pair up respondents in order to carry out, for example, the paired-samples t-test.
- Staff changes.
 - A Lead Teacher from School A left early 2008 just as the professional development was starting. The new Lead Teacher found it difficult at first to catch up with developments.
 - The Lead Teacher who helped plan the whole development left School B at the end of 2008. The teacher who took her place (HoD of a large department) has had to work hard to learn more about information literacy and to work with the other Lead Teacher in the schools. It appears that there may have been some conflict between staff and the former Lead Teacher which could account for the reluctance of many staff at School B to become involved in the project. Unfortunately this situation was not fully revealed until interviews were carried out in March 2009.
 - Both the Lead Teachers at School C have changed, one early in 2008 and the other late 2008. This has resulted in some delays as both teachers gained sufficient knowledge of and confidence in the project
- In view of the active support and leadership from the principals of all three schools, there was perhaps a mistaken assumption that the teachers in these schools would see information literacy development as important and worth the extra time to take part in the project and, possibly, to change some of their teaching and classroom practices. Getting teachers to buy-in to the planned cluster development is crucial as even a few

disaffected teachers (as happened in this project) can cause problems for those leading the professional development.

- Such a project takes time and funding. This cluster was able to proceed mainly because it has gained funding from the Ministry of Education for four years.

Importance of this project

As more schools implement the revised curriculum (Ministry of Education, 2007), there will be an increased emphasis on the development of lifelong learners in New Zealand schools. Although too soon to gauge the success of this EHSAS Cluster project, it would appear that some changes in teacher understanding and practice of information literacy are occurring already. The schools are to be congratulated for allowing the progress of their project to be evaluated over several years. The eventual findings could well provide an effective model which could be used by other schools and clusters throughout New Zealand (and other countries) which are aiming to improve teacher and student knowledge and practice in order to help their students develop into lifelong learners.

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Biographical Notes

Elizabeth Probert lectures at the Faculty of Education, University of Auckland in the School of Arts, Languages and Literacies. Elizabeth is a trained teacher and teacher librarian and works with teachers enrolled in the Graduate Diploma in Education, specialising in information literacy and information and communication technologies as well as school library and classroom resource development.

Statement of Originality

This statement certifies that the paper above is based upon original research undertaken by the author and that the paper was conceived and written by the author alone and has not been published elsewhere. All information and ideas from others is referenced.

Table 1.

Data used for this paper.

Year	Data	Teachers
2007 T4	Baseline data collection	Online questionnaires, Head of Department (HOD) interviews
2008 T1	Two interviews each	Lead Teachers
2008 T4	Post initial professional development	Online questionnaire

Table 2.

School A. Mann-Whitney test results

Question	Year	N	Mean Rank	Mann-Whitney <i>U</i>	Sig.
Q10. An information literate person is....	2007	25	17.40	110.000	.006
	2008	17	27.53		
Q13. Information literacy is concerned mostly with ICT (Reverse)	2007	25	24.80	130.000	.023
	2008	17	16.65		
Q24. Information literacy skills will develop naturally without explicit teaching as students do more research /inquiry assignments (Reverse).	2007	25	25.14	121.500	.015
	2008	17	16.15		
Q26. The name of the model I use...	2007	25	17.98	124.500	.011
	2008	17	26.68		
Q27. The stages of the model I use...	2007	25	18.62	140.500	.019
	2008	17	25.74		
Q34. I model methods of finding information in books with my classes	2007	25	24.74	131.500	.027
	2008	17	16.74		

Table 3.
School B. Mann-Whitney test results

Question	Year	N	Mean Rank	Mann-Whitney <i>U</i>	Sig.
Q10. An information literate person is....	2007	71	56.42	1449.500	.006
	2008	56	73.62		
Q13. Information literacy is concerned mostly with ICT (Reverse)	2007	71	70.38	1535.000	.017
	2008	56	55.91		
Q19. Information literacy skills are only needed when students are completing a research assignment (Reverse)	2007	71	58.79	1618.000	.046
	2008	56	70.16		
Q25. I use an information processing model with my students when they are carrying out assignments. involving research /inquiry	2007	71	58.68	1610.000	.044
	2008	56	70.75		
Q26. The name of the model I use...	2007	71	56.83	1479.000	.001
	2008	56	73.09		
Q27. The stages of the model I use...	2007	71	59.44	1664.500	.032
	2008	56	69.78		
Q35. I model methods of finding information using online resources with my classes	2007	71	58.51	1598.000	.043
	2008	56	70.96		