

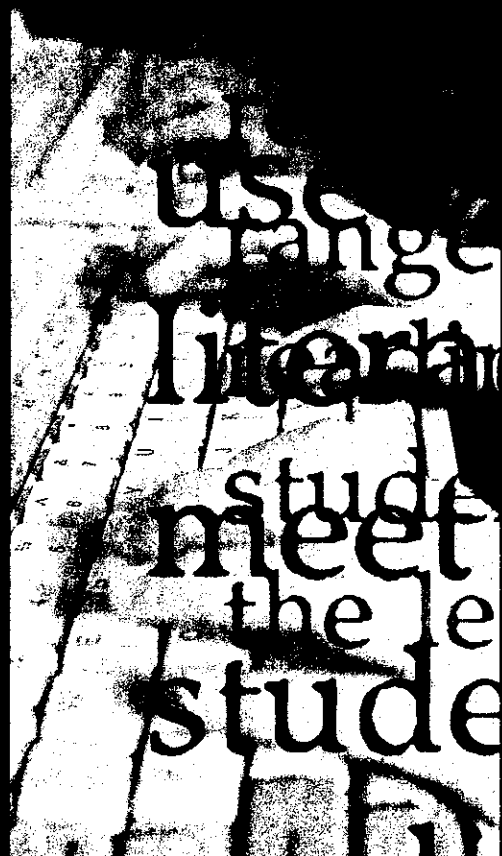
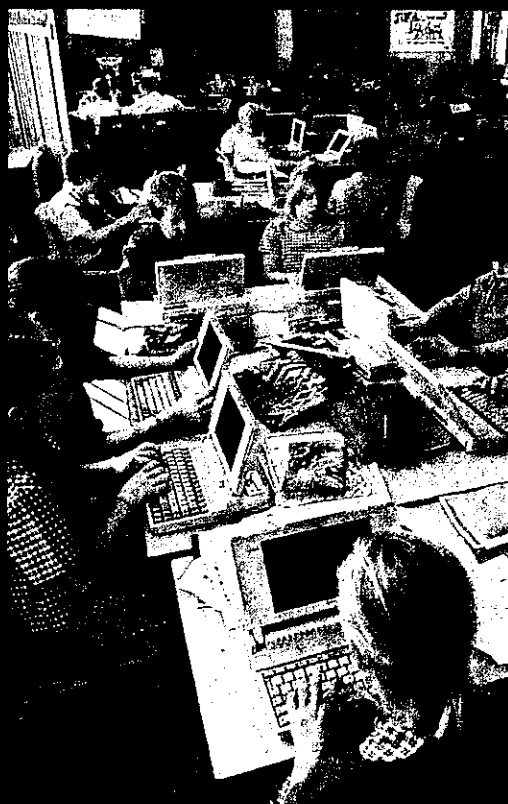
# SCAN

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Curriculum Support Directorate



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# STUDENTS AS AUTHENTIC RESEARCHERS:

## A NEW PRESCRIPTION FOR THE HIGH SCHOOL RESEARCH ASSIGNMENT

*Dr Carol A. Gordon*

### Introduction

What's wrong with the research assignment? The research assignment has become analogous to: "Take two aspirins and call me in the morning." It doesn't seem to do any harm and may even do some good. Educators adjust the dosage for older students: the length of the paper grows with the time allotted to the task, but the prescription is the same. It is universally accepted as a benign activity that allows teachers to attend to the 'real curriculum' while students get better at 'writing a research paper'. Teacher-librarians promote the assignment because they want students to get better at searching, retrieving and evaluating information. English teachers see it as an opportunity for sustained writing. Parents like it because it is good preparation for university. Everyone likes it because it gets students into the library and reading. So, what is wrong with research as it is traditionally taught in secondary schools? And what do students think?

The research assignment operates on the report level when student involvement is limited to information gathering, usually demonstrated by reading and taking notes. Reporting has masqueraded as researching for so long that the terms are used interchangeably. While 'doing a report' can be an appropriate fact finding exercise for short term assignments, it has been over-prescribed, eating up time for learning and practising the thinking skills required by authentic research. Students express dislike for research when, in fact, they dislike doing reports. A study of ninth graders revealed, "The student perception of doing research was writing a grammatically correct report that was well presented and provided other people's answers to someone else's question" (Gordon, 1996, p 32). Students expressed negative connotations for research: it was described as "one of the trials and tribulations of going to school". Research was seen as an addition to school work, and in competition with other assignments: "... we could actually be learning other things in math. We could be learning real things."

Bogus research assignments lead students to perceive library time as an extension of teacher and textbook dependent classroom paradigms. Implicit in the report assignment is an underestimation of what students can

do, sending a clear message to them that they are passive recipients. Influenced by authoritarian, top-down models of learning, students value what teachers say rather than what they discover for themselves. The reticence of teachers to take time for 'research' discredits library based research as a teaching strategy. Students accommodate teachers' low expectations with disappointing results. Even when there is no intent to copy 'word for word' many papers are the product of cutting and pasting information; they contain little creativity and virtually no discovery that has been tested, analysed and internalised by the learner. Easily subverted assignments, with requirements that can be bought for fifty dollars on the Internet, persist in an electronic age that offers an information and data rich environment.

Does 'doing research' have to be limited to highlighting photocopied text from books and magazine articles, and printing out from Internet sites or CD-ROMs? Can students successfully use primary research methods to collect their own data? What if research assignments distinguished between information and data, ie between other people's answers recorded in books and electronic sources, and evidence, or data, collected first hand by the student researcher? What if teachers became authentic researchers in order to evaluate such a unit and used their data to revise it?

### What the literature tells us

The theoretical framework for this study is rooted in school library studies, information retrieval theory and educational research. In the model of the information search process, developed by Kuhlthau (1986), students moved from uncertainty to satisfaction or dissatisfaction with the way they have handled the search prior and subsequent to focus formulation. Both thoughts and feelings were considered as searchers advanced from seeking relevant information to seeking pertinent information. When applied to high school seniors, the stages indicated that information seeking was a complex learning process involving finding meaning (Kuhlthau, 1989). This constructivist approach is based in Kelly's (1963) theory of personal constructs. The function of a construct is to enable learners to anticipate events and predict outcomes, and behaviour is based on the predictions they make. When confronted by a vague new idea, either the system of constructs incorporates the idea or, if the idea cannot be assimilated, confusion results. Kelly speculated that the individual may choose to form a hypothesis which enables him/her to get on with the task or reject the hypothesis. Assessing the outcome of the undertaking and reconstructing are the final phases of the cycle of construction.

Models of information seeking evolved toward a problem-oriented school of thought that borrowed its approach from cognitive science. Belkin (1980) identi-

*Table 1: The Research Plan*

Research Questions	Data Collection Methods
How did students judge the unit? How would they change it?	Questionnaire administered by the teacher-librarian at the end of the unit. Observations of student behaviour, comments during unit.
How did teachers judge the unit? How would they change it?	Content analysis of students' papers: teachers graded for content/form and teacher-librarian graded appendices. Observations and questionnaire results were shared in a meeting attended by English teachers of Grade 10, teacher-librarian, and Principal.

fied an anomalous state of knowledge (ASK) in which there were gaps in the user's knowledge about the problem and what the user needs to know to solve the problem. The expression of an information need was a statement of what the user did not know (Belkin, Oddy, & Brooks, 1982). Belkin (1980) traced the user's movement from an anomalous state to one of specificity and described a scale of levels that represent the user's ability to articulate an information need.

Ausubel (1963) provided cognitive learning theory for the study. In order for meaningful learning to occur, new information must be linked to pre-existing knowledge. This led to the distinction between rote learning which is verbatim, involving externally dictated stimulus response associations and reception-discovery learning, which requires the association of new learning material with what the learner already knows (Ausubel, Novak & Hanesian, 1978).

**Testing a new prescription: students as authentic researchers**

The setting for the study was Frankfurt International School in Germany, an independent school serving employees of multinational corporations and government agencies as well as German families. The school has an enrolment of over 1600 students on three campuses. The high school, located on the largest of these, enrolls over 400 students from more than 50 countries in the world. Most students in Years 11 and 12 complete the International Baccalaureate, and this requires an Extended Essay of 4000 words. Teachers wanted to target analytical methods to improve exam scores and Extended Essays, and identified working with students in Grade 10 as the starting point for this preparation.

The context of the research project was a research unit designed by the teacher-librarian in collaboration with Grade 10 English teachers. The unit focused on developing students as authentic researchers, competent in: defining researchable questions; collecting and analysing

primary data; and drawing conclusions. As part of this process, students participated in an advisory class once every six school days and the teacher-librarian taught a series of nine pivotal lessons focusing on the authentic research process. These included: question formulation; hypothesis generation; methods of collecting data, both qualitative and quantitative; data analysis; use of evidence; and making conclusions. As part of the learning process, students were required to submit two proposals outlining their study. They visited the library eight times to gather information. English teachers provided class time for the writing process, providing research guidance, including peer editing of rough drafts.

Teachers, as action researchers seeking to evaluate the learning process of students, applied similar questions to design their study. The questions they formulated were: 1. What are the major questions of our investigation? 2. How can we refine the questions to collect data? 3. How can we collect data for each question? 4. How can we collaborate to analyse the data? 5. What conclusions will inform revision of the unit? Against this backdrop, the action research focused on two questions: Was the Grade 10 authentic research project successful? How could we do it better? These questions were refined and data collection methods were developed as shown in Table 1.

**Findings**

How did students and teachers judge the unit? What changes would they make? After the final drafts were submitted, 65 students completed an eighteen item questionnaire. Items 1-12 used a Likert Rating Scale of 1-5, with 1 indicating strong disagreement and 5 indicating strong agreement. Items 13-18 required extended written answers.

Table 2 summarises the data. The first five columns display student responses. A 1-5 Likert Scale is problematic because the 3 rating is difficult to interpret, so the number of responses for each item for ratings of 1, 2, 4, and 5 were added to determine N, or the number in the

sample. Scores for ratings of 1 and 2 were added to determine the number of respondents who disagreed; scores for ratings of 4 and 5 were added to determine the number of responses which agreed. The percentage of those who disagreed and those who agreed was calculated and reported in the last two columns. These calculations help to identify trends in the data and are used in the analysis that follows. Data from items 13-18, which elicited written comments from respondents, along with data collected during the meeting with teachers, are used to triangulate the data in order to provide additional evidence for conclusions drawn, and/or to provide explanations for these conclusions.

Timelines, which students were required to generate, were considered reasonable by 63% of respondents: the project began in February and ended in April. Advisory class was scheduled once a cycle with two holidays weeks intervening. When asked what they would change to improve the project, 25% of respondents suggested more time. This indicates many students did not have the same perception of instructional time as teachers, who thought too much class time was used and that the project needed to be shortened and intensified. With the elimination of the advisory sessions next year, all lessons will take place in English classes. Teachers were concerned about what would be eliminated from the English curriculum to make time for the research assignment. Data about timelines was expanded by the questions, "Do you think it was worth the class time allotted?

Why?" While 92% of respondents said the project was worth the class time, two thirds of that group stated that allotting class time gave them the time to ask questions and get help. A typical comment was, "We got guidance during the lessons which was very valuable". This was substantiated by the frequently written response, "I could get help when I needed it". Teachers, however, did not agree that class time was as well used for writing as it could have been. They concluded that class time for writing must be focused, with a product expected at the end of each period.

Data for items 2 and 3 of Table 2 indicate that students' perceptions of the clarity of instructions and availability of library resources were positive. Many student comments alluded to how precise and formal was the assignment. While students were positive about available resources, they did not respond as positively to feeling prepared for information searching, as shown in item 9 of Table 2. Many students had never used the Internet and required help after school. It was apparent during an inspection of bibliography charts midway through the unit that most students did not take full advantage of library resources and had to be directed to specific sources of information. Bibliographies in the research papers also indicated this. In the meeting, teachers discussed this issue and it was noted that teachers and their students need to become more familiar with databases available in the library through focused lessons and briefings. Data on grading (item 4) seems overwhelmingly

Table 2: Summary of Data

Questionnaire Items	1	2	3	4	5	NR*	% Disagree	% Agree
1. Timelines	4	11	24	21	4	1	37	63
2. Instructions	2	9	17	25	12	0	23	77
3. Library resources	5	7	17	25	11	0	25	75
4 Grading system	1	2	23	25	2	12	10	90
5. Bibliography charts	4	8	11	21	21	0	22	78
6. Keywords	9	10	23	15	6	2	48	52
7. Proposals	5	7	23	21	9	0	29	71
8. Research question	3	1	11	20	20	0	7	93
9. Information	2	17	12	29	4	1	37	63
10. Help	2	2	17	23	21	0	8	92
11. Data collection	3	10	27	21	4	0	34	66
12. Analysis	3	12	20	28	2	0	33	67

1 = Disagree — 5 = Agree

N = 65 for ratings 1-5

N varies for each item in calculating percentage for disagree/agree since responses for ratings 1 and 2 and responses for 4 and 5 comprise N.

\*NR = No response

positive. However, it was agreed that the rubric, or assessment criteria, should be reviewed more thoroughly with students at the beginning of the unit.

Students were asked to respond to statements about support materials. While 52% of respondents agreed that keywords (item 6) were helpful, teachers thought vocabulary and concepts are prerequisites to writing commentary and that keywords need more emphasis. Item 5 reports a positive reaction to bibliography charts (item 7): 78% agreed or strongly agreed that they were useful. All completed papers included bibliographies.

Only 71% thought writing the proposals was helpful (item 7) while 93% agreed that formulating a research question was helpful (item 8). One student wrote, "Personally I would have wanted to read a lot more than what I did before I thought of a research question. It would have been a lot easier than changing it five times". This revealing comment illustrates the purpose of the proposals and that the respondent learned, albeit the hard way, that research is recursive. Teachers agreed that time spent on background reading was critical in helping students to focus and that some students realised too late into the unit that they should have read more.

Data collection and analysis (items 11 and 12) were not rated as favourably as formulating a research question, with about two thirds of students rating these methods as helpful. Teachers noted that this was the most difficult aspect of the assignment for students. A common problem was the incorporation of uncited material that was not directly linked to the research question or to a method of analysis. Teachers agreed to address this concern next year.

Content analysis of the written responses in the questionnaire identified important issues. A word analysis of responses to the question, "How was this research assignment different from what you have done in the past?" revealed that the following words were used most often: "longer"; "more depth"; "more detailed"; "more demanding". Although comments mentioned precise instructions, format and regulation, students revealed that they felt more independent. "In the past I was given full instructions on the essay. Now I had to do it by myself." When asked what the best aspect of the project was, one student wrote, "That we stood on our own two feet!" Comments also reflected an appreciation of the distinction between reporting and research: "I never did proper research before"; "It was the first real serious research I have done"; and "It was much longer and more difficult than previous papers. It was also much more interesting and more fun as well".

An important indicator of success is student recognition of the distinction between reporting and researching, and their references to "serious research" in the questionnaire. The written comments were overwhelmingly positive: "As a whole, this was a good experience in learning

how to do a research project and essay"; "I thought it was a worthy experience"; and "I enjoyed the research very much".

The principal and teacher-librarian noted that parent feedback was positive; they expressed appreciation for the quality of the assignment and thought the project developed skills students would need in International Baccalaureate studies.

Guidelines mentioned in 39% of the responses included advisory classes and the "paperwork" that was required in the papers' appendices. Four respondents wrote that the journals were "unnecessary". There were indications in students' comments, however, that organisation and time management were the most important factors in feeling better prepared for the Extended Essay. This suggests the emphasis on process and support materials were helpful. Furthermore, responses to the questionnaire items related to support materials (keywords, bibliography charts, proposals and research questions) did not indicate a negative trend (see Table 2). Many comments referred to the various forms or papers that were used in the unit to structure the process for students, followed by comments about fear of losing them and the time it took to assemble them in the appendix of the paper. Adverse student input about the support materials probably arose from logistics rather than the content of the materials. Ten students were not able to attend advisory sessions because of schedule conflicts. One of them commented, "People not taking Advisory ended up in the dust of the mob".

Teachers decided the following changes would be their priorities for next year:

1. Identify project as a Grade 10 assignment rather than practice for the Extended Essay.
2. Provide focused class time for writing.
3. Re-word assessment descriptors.
4. Make time for the Grade 10 research paper in the English curriculum.
5. Revise section on citation in the style sheet provided to students
6. Consolidate support materials into a booklet to be distributed to:
  - a. students to eliminate individual handouts and simplify organisation tasks;
  - b. faculty who are teaching or advising student essays.
7. Provide time for student practice with peer editing prior to the project.
8. Offer teachers briefing sessions, inservices, ongoing training or more support for library resources and access, and research techniques for qualitative studies.

## Implications for teacher-librarians

The underlying purpose of this study was to collect data that contributed to the reflective practice of classroom teachers and teacher-librarians who design and implement research assignments. It illustrates that not only is such investigation necessary to challenge a range of assumptions teachers and students make about research assignments, but it also shows that such action research investigations are easy to do.

Based on the overwhelmingly positive reactions of students, it is strongly indicated that a new dimension to the research assignment that challenges students to become authentic researchers is desirable. The researcher concludes that the consensus of students and teachers was that the assignment was a good preparation for the Extended Essay. Students' responses showed a positive trend in attitudes toward the support materials and recommendations for changes generally involved refinement of the project rather than revision. Structure for student efforts provided by support materials, help when they need it, and sufficient time to do the work emerge as primary student concerns. Complicating the issue of time is the differences in perceptions between students and teachers.

Another important implication for practitioners is the training that is essential, not only in existing library resources, but in the use of qualitative research methods. Such training offers the obvious reward of equipping educators with the tools and expertise they need to help students, but also equips them for their own action research that will inform their practice as they model the research process for students. This collaboration of students-as-researchers and teachers-as-researchers is a powerful paradigm for raising instructional quality to a new level of sophistication.

## BIBLIOGRAPHY

- Ausubel, D. P., *The psychology of meaningful verbal learning*. New York: Grune and Stratton, 1963.
- Ausubel, D. P., Novak, J. D., & Hanesian, H., *Educational psychology: a cognitive view* (2nd ed.). New York: Holt, Rhinehart & Winston, 1978.
- Belkin, N. J., 'Anomalous state of knowledge as a basis for information retrieval.' *The Canadian Journal of Information Science*, 5, 1980, pp 133-143.
- Belkin, N. J., Oddy, R. N., & Brooks, H. M., 'ASK for information retrieval.' *The Journal of Documentation*, 38, 1982, pp 61-71.
- Gordon, C., 'Is fish a vegetable?: a qualitative study of a ninth grade research project.' *School Library Media Quarterly*, 25(1), 1996, pp 27-33.
- Kelly, G. A., *A theory of personality: the psychology of personal constructs*. New York: Norton, 1963.

- Kuhlthau, C. C., 'Information search process: a summary of research and implications for school library media programs.' *School Library Media Quarterly*, 18(1), 1989, pp 19-25.

## Abstract

**LIMBERG, Louise.** 'Three conceptions of information seeking and use.' Paper presented at the *Information Seeking in Context 1998 Conference, Sheffield, England, 13-15th August, 1998.* (Manuscript available from Ross Todd.)

This is an insightful paper that presents and discusses some major findings investigating the interaction between school students' information seeking and learning outcomes. The research was based on a sample of 25 senior high school students (aged 18-19 years) in a school in Sweden undertaking an independent research assignment. It used a phenomenographic approach, a research methodology that seeks to unpack the differences in people's understanding of, and thinking about, phenomena and processes, and how these might change over a period of time. Interviews and structured observations were used to collect the data.

The findings identified three distinct conceptions amongst the students of what information seeking was all about, and each of these conceptions had impact on: the search process; selection/rejection of information; extent of use of information sources; and the nature and quality of the product. The three conceptions were: fact finding to find the 'right' answer to the question; balancing information in order to choose right (when enough information was found on particular viewpoint as opposed to another, then the viewpoint with the most information was accepted as the personal standpoint); and information seeking, which was seen to be about scrutinising and analysing information to develop an understanding of a topic.

These findings raise important implications for classroom teachers and teacher-librarians. Understanding the mental models that students have of research is critical if students are to be guided through the research process and become independent and constructive researchers. Equally important is the careful tracking of students in the search process and intervening to ensure appropriate learning outcomes. ■