

# How do you learn? An 11-18 developmental perspective

## **Abstract**

Current approaches to ways in which people learn can be classified as: Constructivism; Behaviourism; Developmental Theory; Neuroscience; Brain-based Learning; Learning Styles; Multiple Intelligences; Right Brain/Left Brain Thinking; Communities of Practice; Control Theory and Problem-Based Learning. In practice, however, there is a degree of commonality between many of these categories.

Despite this diversity, praxis within British schools has focused on content, rather than process. What theoretical bases can be found are often simplified variants of Constructivism and Developmental Theory.

Research has been undertaken at a Local Education Authority comprehensive school in West Yorkshire into ways in which young people think that they learn. 918 students aged 12-18 were surveyed. Responses were quantified to produce a typology of student concepts of learning. Content analysis identifies the styles and methods that they use.

This paper outlines a developmental typology, which is matched against current models.

The implications for schools and the education system are examined.

## **Introduction**

Boston Spa Comprehensive is an L.E.A. school serving the communities of north-east Leeds. It has some 1800 students. During the summer term of 1998, 918 of these students were asked to explain how they learned. Students from Years 7-10 and Year 12 formed the sample group and were asked to complete the survey during morning tutor time, Foundation Studies or Core Studies classes. Almost 70% of the student cohort responded.

## **Methodology**

Students were asked to respond to a series of question. No particular response format was implied, other than the amount of space between questions. Students had the option of writing additional information on the reverse of the question sheet. Many chose to do so. The questions focused on what students had to learn and the ways in which they did.

Respondents were asked to discriminate between things which they *had* to learn, and those things which they *wanted* to learn, and to identify differences in learning styles. The final questions focused on the ways in which students were taught, the ways in which they thought they learned and the ways in which people should learn in school. (The questionnaire is attached as an appendix.)

## **Results**

Most students cited a number of ways in which they learned, with responses falling into a number of categories. The last two categories related to students' use of a computer in learning. The other three categories classified responses in terms of learning through language (both speaking and listening); learning visually or learning through activity.

Responses have initially been grouped by gender. There were 492 female and 426 male respondents, aged from 12 to 18.

Learning Styles: student survey: June 1998.

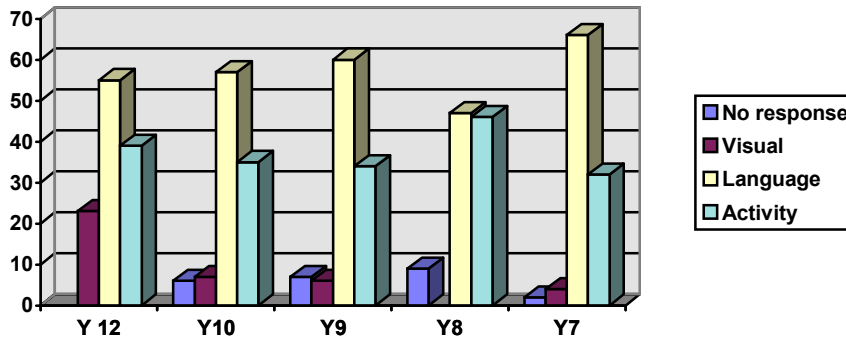
Table 1

Whole school (as % of respondents)								
	Zero response	Visual	Language	Activity		Comp1	Comp 2	N=
12		23%	55%	39%		40%	3%	69
10	6%	7%	57%	35%		17%	5%	209
9	7%	6%	60%	34%		5%	2%	166
8	9%		47%	46%		8%	12%	233
7	2%	4%	66%	32%		9%	5%	241
All:	5%	3%	57%	37%		12%	6%	918

In all of the tables and charts, **Comp 1** is used to indicate that the student has cited that she uses a computer *as part* of the learning process. **Comp2** refers to the student saying that computers should be *used* for learning.

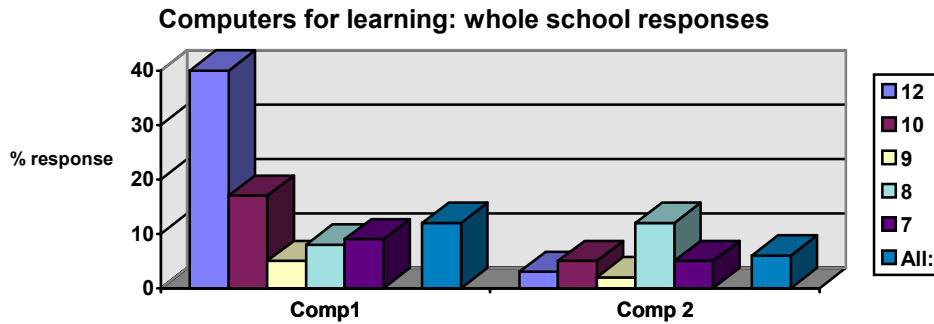
Chart 1

Learning styles: whole school responses.



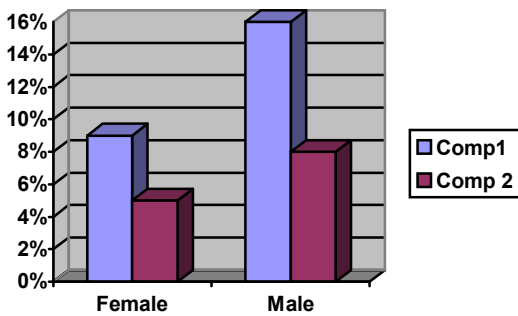
A number of general trends can be identified. The first is that, as a vehicle for learning, language is more important for younger students. The second is that the importance of activity as a basis for learning is relatively constant. The most marked trend is the importance of visual learning for students in Year 12 compared with those in Year 7. The range for Years 7-10 is 4%-7%: the rate for year 12, 23%.

Chart 2



Year 12 is the peak response rate for students who learn with a computer. The awareness of the range of information to which computer use provides access, and the information handling skills necessary to utilise them, are at their highest at this stage of schooling. Of more significance, however, is the comparatively low response rate from students when asked whether computers should be used for learning. The average across the school was 6%. The peak response rate, in Year 8, was only 12%.

Chart 3



There is, overall, a higher response rate for males than females for both aspects of learning with a computer: almost twice as many male students cite computers as being used in learning, or that computers should be used for learning, than do female students.

A more detailed analysis of trends across years follows.

**Table 2**

Female (as % of respondents)								
	Zero response	Visual	Language	Activity		Comp1	Comp 2	N=
<b>12</b>		36%	61%	33%		30%	6%	33
<b>10</b>	1.5%	7%	64%	31%		13%	3%	120
<b>9</b>	6%		62%	33%			2%	89
<b>8</b>	6%		51%	43%		4%	9%	128
<b>7</b>	1.5%		67%	31%		11%	3%	122
<b>All:</b>	3%	4%	61%	37%		9%	5%	492

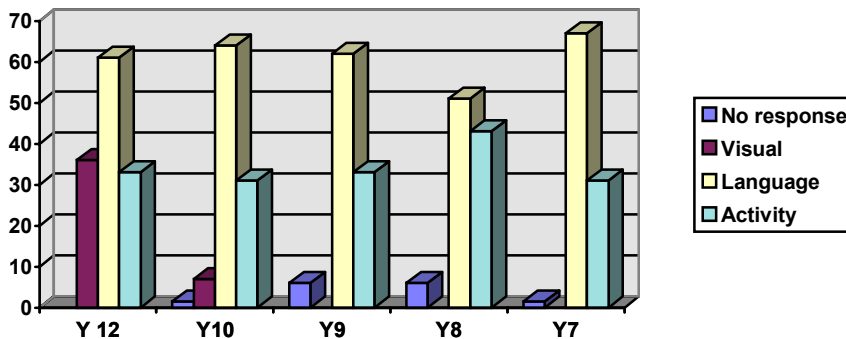
The most significant response is that for learning as **Visual**. 36% of Year 12 females identified learning as having a visual basis, as did 7% in Year 10. There were no responses from other years. **Language** as the vehicle for learning was in the range 51% to 61%; **Activity** within the range 31%-43%, with an average response rate of 37%.

There are two significant differences between the Year 12 group and the rest of the school: Year 12 represents peaks for both visual learning and learning with a computer.

In Year 8, on the other hand, there is a peak for activity as the vehicle for learning, with corresponding low responses for language and learning with a computer, compared with all other year groups.

**Chart 4**

**Learning styles: female responses.**



**Table 3**

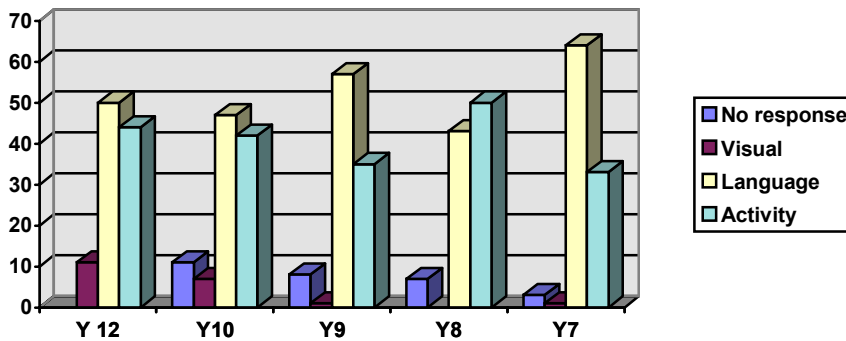
Male (as % of respondents)								
	Zero response	Visual	Language	Activity		Comp1	Comp 2	N=
<b>12</b>		11%	50%	44%		50%		36
<b>10</b>	11%	7%	47%	42%		22%	8%	89
<b>9</b>	8%	1%	57%	35%		10%	3%	77
<b>8</b>	7%		43%	50%		13%	14%	105
<b>7</b>	3%	1%	64%	33%		8%	8%	119
<b>All:</b>	6%	3%	53%	40%		16%	8%	426

When male responses are examined a number of differences emerge. The response rate for visual learning is much lower: an 11% peak for males in Year 12, compared with 36% for females. The responses for activity, and the use of computers, for learning, are higher across the range than those for females.

What is interesting is that there are response peaks in Year 8 for all aspects except that for language, where there is a significant dip compared with Years 7 and 9.

**Chart 5**

**Learning styles: male responses.**



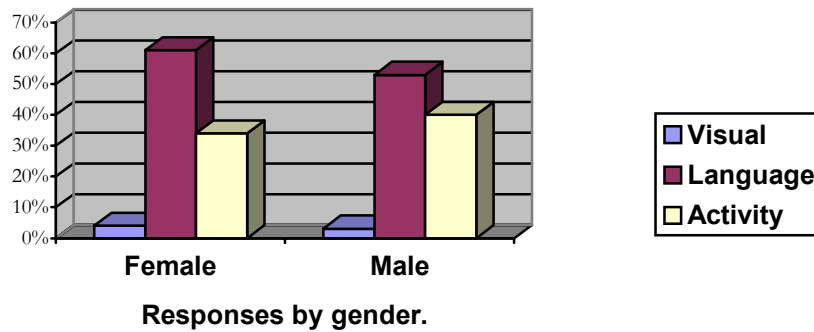
**Table 4**

Whole school gender comparison								
	Zero response	Visual	Language	Activity		Comp1	Comp 2	N=
<b>Female</b>	3%	4%	61%	34%		9%	5%	492
<b>Male</b>	6%	3%	53%	40%		16%	8%	426
<b>All:</b>	5%	3%	57%	37%		12%	6%	918

Students perceive **Language** as the predominant vehicle for learning in which students perceive themselves as learning. The difference between female and male citations of this as a preferred way of learning is, however, greater than citations for other factors. Male responses are higher for transactional factors than female across the range and across year groups.

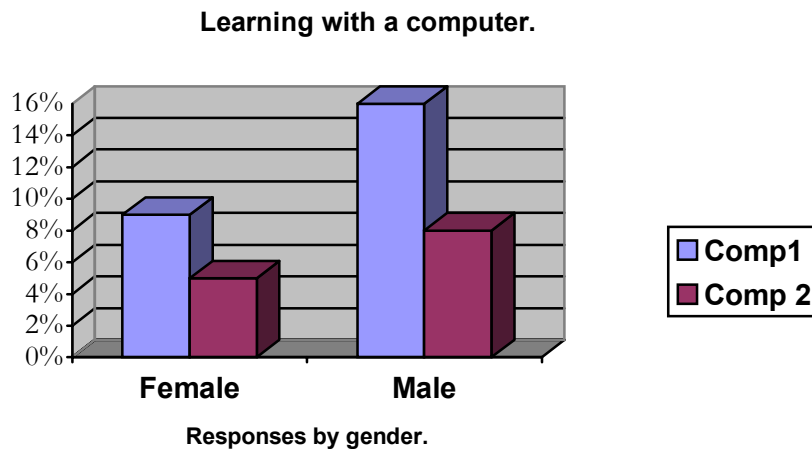
**Chart 6**

**Preferred learning styles.**



The disparity between female and male response rates for learning with a computer does not correlate with gender differences in patterns of ownership. Across the school population, 80% female respondents had access to a computer at home and used it: for male students the figure was 82%.

*Chart 7*



***Commentary***

One can say that, in general terms, there is a developmental pattern that emerges from Year 7 to Year 10. This is true for both female and male respondents. There is a dip in a number of response rates for Year 8 which may well be attributable to the feeling on their part that they have accommodated themselves to the learning styles most appropriate to the mid-point of Key Stage 3. They are still a year away from Key Stage 3 tests and far enough away from their primary schools to feel that they have an appropriate style of learning. This also correlates with the dip in Year 8 performance that is a feature of OFSTED reports.

The distribution shift that is apparent at Year 12 may well represent the preferred learning styles of those who have been successful at GCSE in Year 11 and who have progressed to the

Sixth Form. Those with other preferred learning patterns and styles may find that they are not the guarantor of success that leads to a place in the Sixth Form. Two other factors may contribute to the shift in styles. The first factor is the number of students in the sixth form whose A-level subject choices include Geography, Business Studies or Art. The teams responsible for these subjects present a great deal of content in visual terms, using mind maps, spider diagrams, diagrams, photographs and illustrations. The second factor is that Core Studies sessions feature learning styles, which students are expected to utilise for their General Studies projects.

### **Student awareness**

Throughout the survey there is an awareness on the part of students that the teaching styles they observe are correlated with the teachers' preferred learning styles. From Year 10 through to Year 12 a number of students have commented that there is a mis-match between the learning style imposed by the teacher and the lesson, and the preferred learning style of the individual.

Many students identify successful learning as relating to bodily - kinaesthetic intelligence or musical – rhythmic intelligence (Gardner, 1983). They cite acting, dancing, singing and the playing of musical instruments, horse-riding, motor-bike riding and driving as things which they have successfully learned.

Other topics which students cite as having been learned relate to inter-personal intelligence and initiation into the adult world: what the students perceive as emerging from the state of childhood. A number of boys identify learning "...not to be stupid..." and how to "...be sensible..." as important. Other instances were to learn how to use household appliances effectively and "...how to cook myself a meal...". This was true for both male and female respondents. The ability to manage money was seen as important; the acquisition of social skills; work-related skills (for Year 12 respondents with part-time jobs) and, from Year 10 to 12, the ability to 'handle alcohol'.

A significant number of female respondents saw themselves as having to learn a social role.

## **Activity learning**

Many students perceived activity as the most appropriate learning style. A number of examples were provided of things which fell in this category: dancing; riding, both horses and motor-bikes; skating; skateboarding; roller-blading and sports were all cited by students. A strong sub-set was the cleaning of bridles and tack from female students. This forms part of riding lessons. The bridles and tack are taken to pieces for cleaning.

*“You have to learn how to soap them up, clean them and then put them back together again after you’ve cleaned them. Different types of horses use different types of tack. It’s all part of learning to ride.” Girl, Year 10.*

Practice and repetition is seen as an integral part of the learning process, with feedback from peers or experts as an important part of this process.

*“Perseverance and practice are essential to most learning processes, and although the sense of achievement may be greater when learning something through choice, the determination is equally strong in learning an essential skill or fact.” Year 12, Male,*

## **Developmental trends**

Student responses indicate a strong base in the perception of learning as being about skills. As students progress through the school the range of learning references increases, and skills become less important. The data indicates trends that can be interpreted in a number of ways.

- Concrete perceivers and active processors give way to abstract perceivers and reflective processors. (Kolb, 1984)
- Students are moving from the stage of concrete operations to that of formal operations. (Piaget, 1958; 1972)
- Students are moving from the stage of ‘iconic representation’ to ‘symbolic representation’. (Bruner, 1966)

This data is specific to one set of students in one institution at one point in time.

Despite this qualification, however, it does suggest that developmental trends can be

discerned. These are illustrated by some of the student comments in the section that follows.

### **Student comments**

*“When I’m taught people tell me the things I am learning, but when I am learning I do it myself.” Year 7 Female*

*“If you are made to learn something you find it kind of boring, but if you **want** to learn something, it sort of gives you an independence that makes you feel good.” Year 7 Female*

*“You’re taught by listening and you learn by practice.” Year 8 Female*

*“When you want to learn you try harder but when you have to learn it is harder.” Year 7 Female*

*“Learning is something you do for yourself. Being taught is something the teacher does for you.” Year 9 Female*

*“Teachers shout at you. I don’t shout at myself.” Year 7 Male*

*“Teachers tell you off and disturb me (sic) education time.” Year 7 Male*

*“They talk, we listen.” Year 9 Male*

*“We don’t ‘have’ to learn things, but pressure is put on us to learn things as we have an easier time if we do.” Year 9 Male*

*“When you’re taught they tell you and you still don’t know. But when you learn you know what it is.” Year 10 Male*

*“(I learn things by) ...experience and studying. Doing it! You learn at your own rate but you are taught at someone else’s pace.” Year 10 Male*

*“People will say something and if it makes sense to me I remember it. My brain is quite organised into sections and new facts usually slot in nicely where they should be. If I don’t understand things first time then I usually find a pictorial explanation helps.” Year 10 Male*

*“I learn things through spider diagrams, reading text then writing it down in notes, pictures and tables.” Year 10 Female*

*“I display all the things I need to know on my bedroom wall. When I learn I am alone with all the info. displayed.” Year 12 Female*

*“When I want to learn I push harder for information. When I have to I just take the information in. I learn things through different note styles, such as spider diagrams, bullet points and using a dictaphone.” Year 12 Female*

*“I have learned how to help children ... put makeup on and shave my legs etc. I have learned how to change the style of my hair ... how to horse ride.” Year 10 Female*

### **Implications for schools**

Student responses as to how they learn, together with their perception of factors that inhibit learning, suggest that Gardner’s theory of multiple intelligences correlates with students’ preferred learning styles. Language is the predominant medium of knowledge transmission, and learning is correlated with ‘facts’ and information that has to be memorised. Students’ recognition of their own failure and limitations suggests that their main experience of school-based learning generates an awareness of failure.

This contrasts with all the learning experiences cited within the research: experiences in which learning is successful, where feedback is geared towards achieving success.

Student recognition of the importance of discovery in learning, (Bruner’s ‘working heuristic of discovery’) and the stress upon activity and fun, suggest that, unless the educational establishment modifies its praxis, the indicators of success for the school system will continue to be represented by those who successfully learn through logic and language.

## **Computers and learning**

The reference to using computers as a way of learning may well be because the iconic representations of a Graphical User Interface, the ostensiveness of the point-and-click environment, the ludic elements built into many programs, together with the constant feedback of error messages, automatic correction and built-in user support all combine to provide a range of vehicles for learning.

To use a computer is to engage in a continuous learning process: this in itself is sufficient to foster a sense of awareness on the part of students.

## **Conclusion**

This research has provided a snapshot of the population of one school in one part of the United Kingdom. The picture that emerges confirms the diversity of the learning experience for these 918 students aged 11-18. The observations of Gardner, that intelligence may be grouped in seven strands, supports the classification of student responses. It would suggest that, if schools wish to improve the performance of the students and maximise individual abilities, the processes and interactions of learning are of more significance than the content.

It may well be, however, that the changes that would be necessary to implement these would have profound consequences for the education system as a whole.

If structural and pedagogical change on such a scale is untenable, then the exploration of the role of ICT as a tool for autonomous learning on the part of students may well provide students with the independence they need. They should then be able to fulfil the potential that so many of them know is under-recognised.

## References

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- Gardner, H. (1983) Frames of Mind The Theory of Multiple Intelligences. London. Heinemann
- Inhelder, I, Piaget, J. (1958; 1972) The Growth of Logical Thinking from childhood to adolescence. London. Routledge & Kegan Paul
- Kolb, D. A. (1984) Experiential learning: experience as a source of learning and development. Englewood Cliffs, N. J. Prentice Hall

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## Appendix

### How do you learn?

I'm interested in all the ways in which people learn things. Any help you can give will be greatly appreciated. Some personal details would help my research. You don't need to give your name, but if you wouldn't mind being interviewed, it would be useful.

**Tutor group:**

**Gender:**

What things have you *had* to learn in the past few years? (Anywhere: school, home, work, etc.)

What things have you learned because you *wanted* to ?

*How* do you learn things?

Is there any difference in the way you learn between things you *have* to learn and things you *want* to learn?

What's the difference between the way you're taught and how you learn?

How do you think people should learn in school?

Thank you. If there is any more information you think might be of use, could you write it on the back of this sheet?