

## Personality type and learning environments: Two case studies

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Research by the author has been conducted previously that explores the similarities and differences in online and face-to-face environments, and the exploration of personality type and the learner's experience of the online learning environment. This paper presents two case studies of learners who were categorised using the Myers Briggs Type Inventory<sup>®</sup> according to their connection with the outer world (the Extraversion / Introversion dichotomy and the Judging / Perceiving dichotomy), describing their physical learning environments and the different needs that each environment presents and meets. It then explores possible ways that the online environment might complement the physical learning environment and meet the same needs, discussing the implications for the online environment.

Keywords: personality type, learning environments

### Introduction

There is a growing body of research that looks at personality type and aspects of online learning. Studies have been conducted that discuss the relationship of personality type and the online asynchronous discussion, some with a focus on group learning (Lee & Lee, 2006), some on collaborative partnerships (Ahn, 2003; Russell, 2002) and others on the level of participation (Ellis, 2003; Ellsworth, 1995). Others focussed on learner needs in the online environment and personality type (Irani, Telg, Scherler, & Harrington, 2003; Mupinga, Nora, & Yaw, 2006), others have explored the link between personality and attitudes towards technology (Chambers, Hardy, Smith, & Sienty, 2003), and yet others have investigated personality characteristics and technology use (Buboltz, Young, & Wilkinson, 2003).

Previous research conducted by the author (Ellis, 2001) had investigated the differences between the online and face-to-face environments. Subsequent research (Ellis, 2003) explored the relationship between learners' personality type and their attitude towards, and participation in using aspects of, the online learning environment. At the same time workshops were being conducted that helped learners to explore their physical learning environments.

As Alexander and Boud (2001) say, in their discussion of experiential learning and its relationship to the online environment, "there is no doubt that the physical environment has a surprisingly powerful influence on teaching. ... but it does not change the fundamental process of human learning. ... in the most basic sense, the online learning environment is just another physical learning environment: more complex than some others, but a new space for teaching and learning" (p. 4). This prompted further exploration of learners' physical learning environments and whether there were aspects of online learning environments that provided a similar focus and met the needs learners felt were important to them in the real world environment.

This paper presents two case studies of learners who, as determined by the Myers Briggs Type Indicator<sup>®</sup> (MBTI), were categorised using the Myers Briggs Type Indicator<sup>®</sup> according to their connection with the outer world (the Extraversion / Introversion dichotomy and the Judging / Perceiving dichotomy), describing their physical learning environments and the different needs that each environment presents and meets. It then explores possible ways that the online environment might complement the physical learning environment and meet the same needs.

## Personality type

Personality type in this paper is determined using the Myers Briggs Type Indicator® personality inventory. This is a self-report questionnaire that is based on Jung's personality type, that is, "the way people perceive and the way they make judgments. *Perceiving* here is understood to include the processes of becoming aware of things, people, occurrences and ideas. *Judging* includes the processes of coming to conclusions about what has been perceived" (Myers & Myers, 1995, p. 1). These two ways of functioning determine how people behave – what they see in a situation and what they do about it.

## Personality and its relationship to the outer world

It is not enough, however, to categorize people on their perceiving function (i.e. sensing (S) – focussed on information from the senses or intuition (N) – focussed on concepts and ideas) and their decision-making or judging function (i.e. thinking (T) – decisions based on logic or feeling (F) – decisions based on a personal value system). These functions interrelate in a variety of ways, and in order to understand how this happens for the different types, it is necessary to look at the four attitudes or orientations of extraversion, introversion, judging and perceiving. These attitudes have a profound effect on a person's relationship with the outer world – the attitude and attention a person gives to the outer world (extraversion or introversion) and what of his / her judging or perceiving function is shown to the outer world (judging or perceiving).

Extraversion (E) and Introversion (I) are seen as "complementary attitudes or orientations of energy. ... In the Extraverted attitude, energy and attention flow out, or are drawn out, to the objects and people in the environment" (Myers, McCauley, Quenk, & Hammer, 1998, pp. 25-26). Extraverts will therefore, be energised by interaction with others and will be keen to interact, often showing "a desire to 'talk things out' " (Myers et al., 1998, p. 26), particularly in the first instance to aid with learning activities such as problem solving and analysis.

On the other hand, "in the Introverted attitude, energy is drawn from the environment toward inner experience and reflection. ... The main interests of the Introverted type are in the world of concepts, ideas, and inner experiences" (Myers et al., 1998, p. 26). Introverts will feel most energized when working on ideas by themselves, often preferring in the first instance to reflect by themselves when undertaking similar learning activities, as they often show "a desire to 'think things out' before talking about them" (Myers et al., 1998, p. 26).

Judging (J) and Perceiving (P) are the attitudes that determine how a person interacts with the outer world. Those with a J type preference will habitually use their decision making function when interacting with the outer world. They tend to draw conclusions and make decisions quickly preferring order and up-front planning and it is this that they show to the outer world. Those who have a P type preference focus on the perception of information when interacting with the outer world. They tend to delay making decisions, feeling it is necessary to continue to collect information for as long as possible before reaching closure. They will be prepared to allow options to stay open and prefer a less ordered approach than those with a J type preference (Myers et al., 1998).

It is important to note that extraverts, whose preference is for interacting with the outer world, will show their dominant preference to the outside world. This will be their perceiving function (sensing or intuition) for those with a P type preference and their judging function (thinking or feeling) for those with a J type. Introverts, however, whose preference is for their internal world, will show their second best or auxiliary preference as determined by the J-P dichotomy to the outside world, keeping their dominant preference internalised.

It is this focus on the outer world (i.e. Extraversion / Introversion combined with Judging / Perceiving) that has been used to categorise the students and subsequently have them explore the nature of their preferred learning environment.

### **E-P group characteristics**

These people show their dominant perceiving function of either sensing or intuition to the outer world. For this group one would expect to see considerable variety and little formal order, with emphasis on creativity, physical comfort and interaction with others.

### **E-J group characteristics**

These people show their dominant judging function of either thinking or feeling to the outer world. For this group one would expect to see a more structured environment than for E-P types, but still focussed on interaction with others and the outer world.

### **I-P group characteristics**

These people show their auxiliary perceiving function to the outer world, internalising their dominant judging function. For this group one would expect to see much more focus on the individual inner world of ideas rather than their outer world. External environments are often irrelevant or idealised.

### **I-J group characteristics**

These people show their auxiliary judging function to the outer world, internalising their dominant perceiving function. For this group one would expect to see a well-structured external environment focussed on the individual. External order is needed to allow the introverted dominant perceiving function to have its full reign internally.

## **Personality type and learning environments**

### **Extravert–introvert dichotomy**

Research into personality type and learning environments, when focussing on the outer world, has concentrated on the extraversion–introversion dichotomy. Russell (2002) found that introverts found the asynchronous discussion environment less threatening than the face-to-face environment, because it provided time for reflection needed for engagement with their inner world. She also found that extraverts conversely preferred the face-to-face environment that allowed them to connect with others.

This need for reflection and connection with the inner world is also supported by Day and Batson (1995), who found that “reticent students ... do not participate [in face-to-face-class discussion], simply because they do not ‘think on their feet’ as quickly as some of the other students” (p. 38).

Opt and Loffredo (2000) found introverts had significantly higher levels in communication apprehension in face-to-face environments. Taylor (1998) also found introverts preferred computer mediated seminars in preference to face-to-face ones, while extraverts preferred the face-to-face environment.

Where group collaboration was concerned, Ahn (2003) states that “extroverted [sic] types like discussions, verbal information, and active participation. On the other hand introverted type like large lectures and independent projects” (p. 1455). He found that introverts performed better in the asynchronous collaborative environment, while extraverts preferred the face-to-face environment. This supports the author’s own findings that groups with predominantly introvert type personalities perform better in the asynchronous online collaborative environment than do extraverts (Ellis, 2003).

### **Judging–perceiving dichotomy**

For the judging–perceiving dichotomy, importance of structure was evident for J type personalities. Russell (2002) found that J types liked the structure of the study guide, often using it in printed form. Buboltz et al. (2003), who used a different personality inventory than the MBTI, found that “for individuals that have a sense of duty, self-discipline and are conscientious they tend to use the computer more often in general” (p. 1144). This sense of duty fits well with those who have a J type personality, as they are concerned with making decisions and seeking closure (Myers et al., 1998).

## The participants in the study

### Case study one

The participants in case study one were 40 fourth year students enrolled in a Bachelor of Education degree. All students sat the MBTI formally, then were grouped according to a combination of the E-I / J-P dichotomies. Students split into groups of four or five students within their initial grouping. This resulted in three groups representing E-P, three groups representing E-J, two groups representing I-P and one group representing I-J. Each group was given a sheet of butcher's paper and marking pens and was asked to show what their physical learning environment would look like. Each group explained what was important to them when the final representations were discussed.

### Case study two

The participants in case study two were tutors (all of whom were also postgraduate students) in a Faculty of Information Technology. These were categorised informally using a question relating to introversion / extraversion preference, then one related to the J-P dichotomy, resulting in one group of each category (I-P, E-P, I-J and E-J). The questions used to categorise the participants into the dichotomies were based on exercises normally used as part of the debriefing for people having formally taken the MBTI. After the representations had been drawn, the tutors came together as a large group, and for each representation were asked to describe what they saw.

## The learning environment representations

### E-P groups



Figure 1: E-P group 1 – case study one

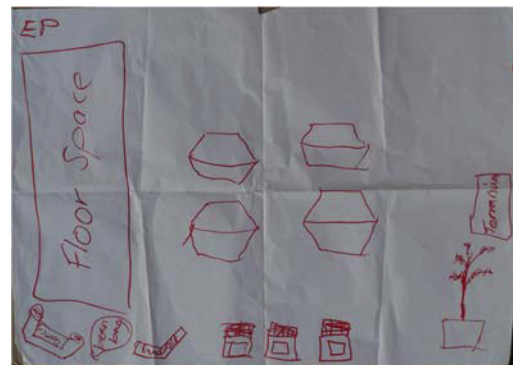


Figure 2: E-P group 2 – case study one



Figure 3: E-P group 3 – case study one

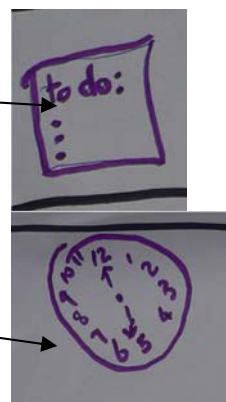


Figure 4: "To do list" and clock

*Case study one – education students*

All three groups (see Figures 1, 2 and 3) filled the page, with group 1 in particular (see Figure 1), showing a busy, somewhat chaotic picture. The emphasis on external comfort is evident, as one would expect for an extraverted preference. Groups 1 and 2 indicated connectivity with other people. Group 3 included a “to do list” and a clock (see Figure 4), items not usually associated with the E-P type. When questioned, the students indicated a need for these things to keep on track with study, realising that without them they would not complete work on time.

*Case study two – the tutor group*

Similar to Group 1 of case study one, this group shows a loud, exuberant diagram with the entire pages filled (see Figure 5). Both diagrams were drawn from the same group and, when limits are not placed on paper usage, E-P groups will tend to use more than one sheet, often feeling that their extraverted creativity needs more expression. Once again the emphasis on interaction with people and on external comfort is evident, as one would expect for an extraverted preference. In the second diagram, there is some attempt to employ structure, but this has been relegated to the bottom left-hand corner. In a similar way to E-P group 3 of case study one, the tutors indicated they were aware they needed structure in order to succeed in the university system, but it was relegated to the corner as a necessary evil. The descriptive words used by others included “chaos / messy” and “fullness / loud” whereas the group themselves used “ideas / creative”, “group” and “physical comfort”.



Figure 5: E-P group – case study two

**E-J groups**

*Case study one – education students*

Aspects relating to the external world and physical comfort were prevalent in the representations from all three groups (see Figures 6, 7 and 8), illustrating the E type preference. All three mentioned “space”, “warm” or “warmth”, and sound aspects (e.g. “little bit of background noise”, “music / quiet sound”) and two mentioned food and light aspects (i.e. “windows”, sunlight”, “bright”). The outward connection appears to be related to objects in the physical surroundings rather than people. Two groups commented on needing a solo study environment (i.e. “by oneself”, “solo achievers”). When questioned one student indicated she knew if people were around she would be too distracted to get any effective study done, so deliberately isolated herself. Evidence of the J type preference appeared in two of the groups, both using words such as “organised” and “structure”. All three groups chose to use text only for their representations and displayed a similar layout for the words on the page. The end result appeared neat and expansive. This would tend to illustrate an underlying sense of structure yet a connection to the outer world.

*Case study two – the tutor group*

Here (see Figure 9) the focus was more on learning rather than the environment itself, however the extravert preference appeared with reference to material resources (connection with objects) as well as interactivity with people and a focus on the lecturer. The J type preference was very evident in the structured form of the diagram. The description of the representation included the words “balance”, “links”, “concept map = relationship” and “clean / structure” indicating an ordered, balanced approach usually evidenced in a J type preference.

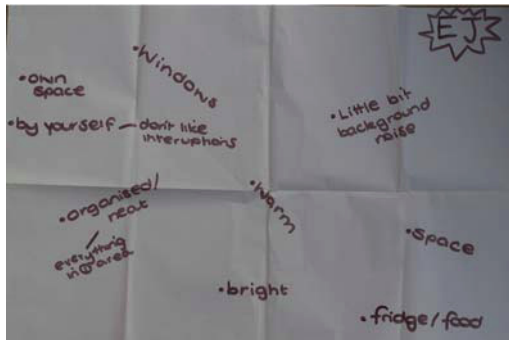


Figure 6: E-J group 1 – case study one

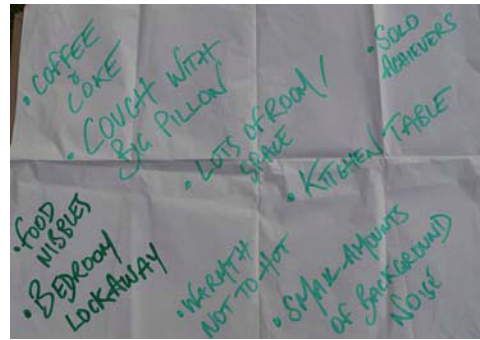


Figure 7: E-J group 2 – case study one



Figure 8: E-J group 3 – case study one

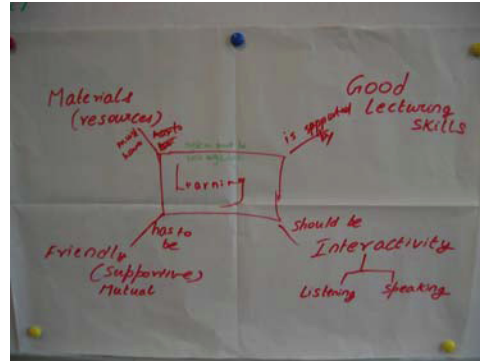


Figure 9: E-J group – case study two

**I-P groups**

*Case study one – education students*

The most striking feature of the representation (see Figure 10) was the use of only a portion of the page. The author has found, when running similar sessions, this has been a feature of other I-P groups. It is interesting to note that the stick figure is placed in the middle, between the detailed personal space and “other” features. When asked about this, the group indicated that the part on the left was their personal space while the part on the right was the outer world. The left hand side displays a well-structured environment, perhaps indicative of their introverted preference of structure (their decision making function is dominant for this group, but internalised). The right hand side is more nebulous, perhaps indicating that the outer world is not as important. The reference to a lot of open books (shown just above the stick figure) is indicative of their perceiving function shown to the outer world.

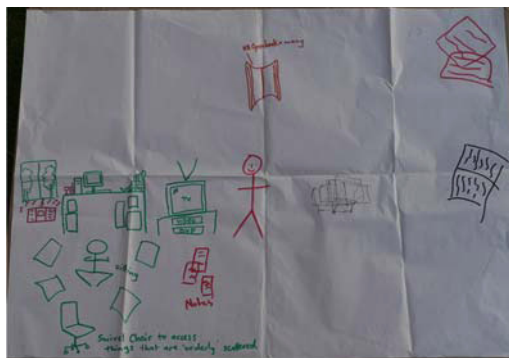


Figure 10: I-P group – case study one

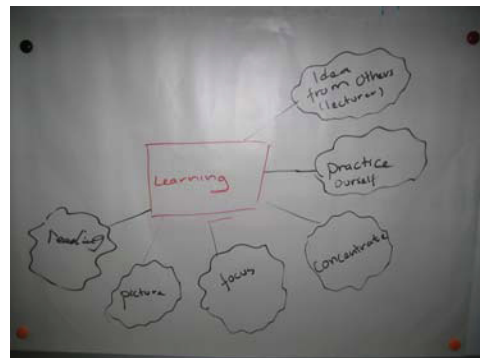


Figure 11: I-P group – case study two

*Case study two – the tutor group*

This representation (see Figure 11) also shows some evidence of only using part of the page. The layout is structured, however it appears to be somewhat internalised as indicated by the words “practice yourself”, “focus” and “concentrate”. The P type preference shown to the outer world appears to come through in the variety of sources of information (reading, picture, ideas from others). The words used to

describe the representation were “detached”, “ideas” and “concepts”, indicating an introverted preference. Others described the diagram as “unfinished”, while the group themselves described it as “open”, indicating the P type preference shown to the outer world.

### I-J group

#### Case study one – education students

This representation (see Figure 12) shows the typical individualistic, externally structured environment one would expect to see for an I-J type preference. Features include a neat, tidy, quiet environment, with the “to do list” in the bottom right hand corner shown as a major feature.

#### Case study two – the tutor group

In this case (see Figure 13), individuals in the group chose to draw their own separate representations. (see Figures 14 and 15 for detail), showing the individualistic characteristic common in the I-J preference. The bottom right hand corner contrasts a pleasant idealised scene with a list of words (e.g. “computer”, “Internet”, “snacks and drinks”, “desk”, “comfortable chair”, “music / radio”). When asked about this diagram the tutor said the list represented his external environment while the scene was his internal environment that helped him work through his ideas. This supports the I-J type’s dominant introverted perceiving function. For the top I-J representation (see Figure 15) the ever present list of the J type was present, with a range of resources as support but no connection with others, as one would expect for an introvert. Words used to describe the diagrams were “individual”, “group = stress”, “privacy”, “inner focus”, “structure” and “silence”, once again focussing on the inner world of ideas.

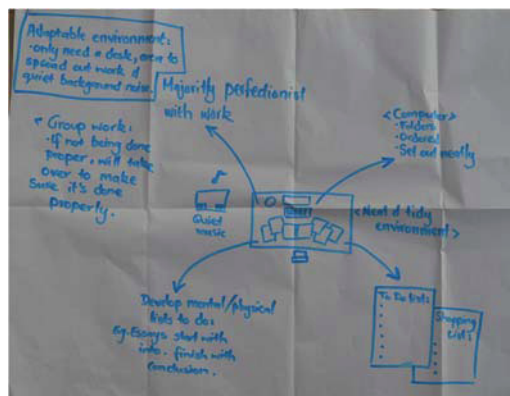


Figure 12: I-J group – case study one

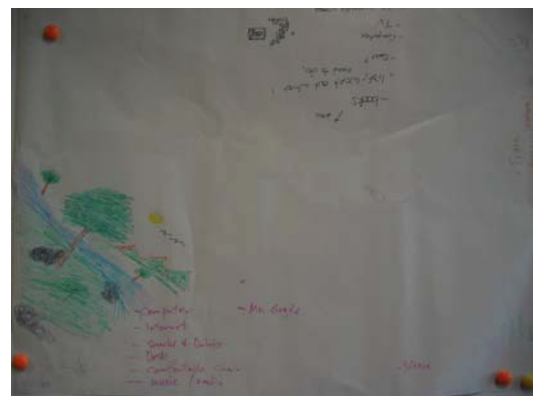


Figure 13: I-J group – case study two



Figure 14: Detail of bottom LHS of Fig. 13

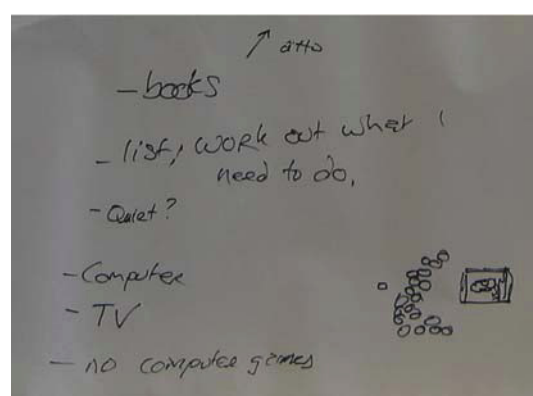


Figure 15: Detail of top RHS of Fig. 13

## Implications for the online learning environment

A number of features have emerged from the above descriptions that should be considered for the online learning environment.

## **Physical and virtual surroundings**

From the descriptions above, physical surroundings play an important part in the learning environment. Extraverts are very much aware of their physical surroundings and like them to be comfortable with a sense of space and airiness, while judging types need structure to their environment.

For the online environment, the layout and design of the virtual space may be just as important, particularly for extraverts. Such design could be facilitated by using icons that are connected in meaning as closely as possible to their real world counterparts (for the extraverts), colour schemes that reflect a sense of light and space (for the E-J types) and well structured (for the J types).

## **Personal versus group space**

Introverted types need individual personal space for effective learning, while extraverts indicated connection with others is important. Provision in the online environment for both personal aspects of learning (e.g. a private journal) as well as opportunities for connection with others (e.g. an online café or shared workspace), are needed to suit both the introvert and the extravert. Often group workspaces are all shared, which does not provide the introvert with an area for personal reflection. Conversely when individual work is required, no casual environment for group discussion is made available for the extraverts.

Ensuring both asynchronous and synchronous means of connection with others, and the provision of interactive mechanisms beyond just text-based systems ensures both extraverts and introverts benefit from interaction with others. Extraverts, for whom interaction with others is essential, often find the online asynchronous text-based discussion environments lacking in the connectivity with others that they require (Ellis, 2003). Thus mechanisms for students to gain a sense of one another in the virtual environment are needed. This might be through the creation of personal video clips that others can view, or real time opportunities, particularly using audio-base chat. Conversely, introverts often appreciate the time afforded for inner reflection (Day & Batson, 1995) through the asynchronous discussion environment, finding synchronous discussion as stressful as face-to-face group communication.

## **Structure versus flexibility**

Those with a judging type personality preference will prefer a structured environment. P types also often recognise the need for structure, as shown in Figures 3 and 5, while revelling in flexibility and opportunities to be creative. There is also a need to ensure appropriate structure for group collaboration as J types tend to collaborate better than P types in the online asynchronous environment (Ahn, 2003). Developing structure for the environment through student involvement can satisfy the needs of the J types, while encouraging the P types to embrace structure without feeling it is being imposed or stifling their creativity.

## **Creativity**

The external expression of creativity appears to play an important role for E-P types, while internal creativity is important for I-J types. The opportunity for students to be able to express this creativity in various ways needs to be included in the online learning environment. This might involve the provision of a portfolio area for students to put down their own ideas and a shared space for those who wish to discuss and create with others. Such areas should be made available for non-assessable purposes, as making portfolio areas only available for assessable work tends to restrict the creativity aspects of learners – through time constraints for extraverts and through lack of privacy for introverts.

## **Conclusions and further research**

By investigating learners' physical environments it is possible to identify aspects of those environments that the learners themselves deem necessary to support their learning and to highlight aspects of online learning environments that might mirror these aspects in the virtual world. However these case studies only scratch the surface of the learner's learning environment and its implications for online learning. Subsequent research is currently being undertaken to explore further the construction and use of learning environments from the learner's perspective when involved in online learning.



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