Addressing the Needs of Cyberlearners

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Introduction

Formal learning through online courses differs from personally motivated incidental learning using the online environments of the Internet and email. The complication in relation to formal learning is the 'intrusion' of assessment which is often designed by a teacher who has different personality preferences from some of their learners. There seems to be an assumption that more learning occurs in an online course where students are interactive and possibly replicating a face-to-face classroom. Working or interacting with other students is stimulating for some and demotivating for others. The extra pressure to 'get a good grade' motivates some learners, while for others it places boundaries and may potentially limit their learning experience. A teacher who can recognise and provide strategies to cater for different MBTI preferences in a course design can set up positive learning experiences for all their students.

Postgraduate students studying an off campus course received a printed study guide and a book of readings. As a course requirement they were expected to use the Internet and participate in asynchronous online discussion forums. Student reflections on their approach to studying in this online course have been analysed and matched with each student's MBTI preferences. Analysis shows different personalities focus on online issues according to their specific personality type dynamics.

Prior Research Related to Online Learning

Extensive research studies report on the differences in learning experiences and outcomes between web-based, face-to-face and mixed mode offerings (for example: Coomey & Stephenson, 2001; Kirkup, 2002; Picciano, 2002; Russell, 2002; Salmon, 2000). Web-based instruction may involve print study resources with substantial expectations of students to use the Internet and communicate with peers and their teacher asynchronously using email and/or discussion forums and sometimes synchronously using real time chat or conferencing. These students are generally located off-campus. Face-to-face and mixed mode usually involves students who have all or some on-campus classes where they interact directly with their teacher and other students. In all formal teaching courses instruction must be designed to address the learning needs of the participants.

Online socialisation provides an important step in Salmon's (2000) model of teaching and learning online. In her model students have achieved technological access and are motivated to become involved in the course. She found the sending

and receiving of messages or 'online socialisation' is necessary before students can focus on the course content and share information which in turn enables knowledge to be constructed and eventually applied into the wider environment beyond the learning context. The need for technology to become 'invisible' before students can focus their attention on interaction with peers and involvement with course content was also identified by Russell (1995).

Coomey and Stephenson (2001) describe four key features which benefit learners and reflect good teaching practice. In exploring the research they found dialogue, involvement, support and control (DISC) represent essential strategies which improved learning no matter which mode of instruction is used. These authors report when dialogue with peers is not a requirement of a course some students choose not to participate. Students who are involved and challenged to explore content which is clearly defined will be motivated and involved in their learning. Technical support and feedback encourage a 'congenial' learning community. When supported learners have control over their learning activities and assessment, the outcomes are improved.

Dialogue or interaction is also a valued factor in Picciano's (2002) study where he found high interactivity by students related to high grades in a written assignment which to some extent replicated the structured weekly discussion forums. Hence these students had been actively rehearsing the skills required of the written assignment. There was no significant difference between the high interactive students and other students in relation to the examination which was based on theoretical content. Picciano describes a study by Michael Beaudoin (2001) where the relationship between student interaction and learning is also examined:

> In the study, he divides an online class into three groups (high interaction, moderate interaction, and low interaction). He reveals that while the high interaction students achieved the highest performance, the low interaction group performed higher than did the moderate interaction group. (Picciano 2002)

The above research related to online learning assumes students who have more 'observable' or measurable interaction with their peers and teacher will learn more. Research such as this does not seem to take into account the personality preferences of the participants. Some participants may prefer high interaction while others prefer to work alone prior to sharing with their peers and may find sharing detracts from their personal learning. When the teacher or moderator designs instruction to promote socialisation and sharing of information in a supportive, safe and non- threatening environment, the recognition of different learning or personality needs of individuals should also be addressed.

In a constructivist learning environment, it is anticipated students will build on previous personal and educational experiences as they construct new knowledge for themselves. For each Myers Briggs type this will be carried out in a different way. My aim in this research is to identify how different Myers Briggs types prefer to gather information and create meaning or knowledge when studying online.

Brief Overview of the Myers Briggs Concepts

The Myers Briggs Type Indicator built on the work of Carl Gustav Jung whose book *Psychological Types* was translated into English in 1923. Katharine Briggs and her daughter Isabel Briggs Myers developed Jung's concepts of innate preferences as an Indicator which is used extensively for organisational teambuilding, relationship counselling and personal awareness development. MBTI addresses four ways people gather information and four ways they make judgements or decisions about the information. The perceiving or information gathering functions (also called preferences or mental processes) are sensing (S) and intuition (N) and these are further divided according to whether they are extraverted (Se and Ne) or introverted (Si and Ni).

The sensates (S) gather information from the reality of the world around them. They see details and experience their environment through hearing, touch, smell, sight and taste. The extraverted sensates (Se) tend to react immediately to their perceptions of the outer world and are likely to 'get the job done right now'. The introverted sensates (Si) take their perceptions of the outer world into their inner world and relate their current experiences to previously experienced situations where they recall how something 'was done' in the past.

The intuitives (N) gather information from the world through impressions which 'just appear' in their mind as they tend to see the big picture and possibilities. The extraverted intuitives (Ne) in the outer world enthusiastically brainstorm possibilities for the future. The introverted intuitives (Ni) work through ideas in their inner world and develop a vision for the future.

The judging or decision making functions (also called preferences or mental processes) are thinking (T) and feeling (F) and these are further divided according to whether they are extraverted (Te and Fe) or introverted (Ti or Fi). People with a thinking function preference make decisions based on objective logic. The extraverted thinking (Te) preference person is focused on cause and effect of organising operations in the outer world environment. The introverted thinking (Ti) person evaluates decisions based on objective inner analysis of data. The decisions made using the feeling preference are based around personal values. The extraverted feeling (Fe) preference person is focused on creating harmonious relationships with people. The introverted feeling (Fi) preference person considers congruence with personal values when making a decision.

A key characteristic of the Myers Briggs Indicator is the dynamic of the whole type interaction of a person's innate preferences. Each person has a dominant function and a supporting auxiliary function. One of these will be a perceiving or information gathering function (S or N) and the other will be a judging or decision making function (T or F). In addition, for each person one of these functions will be extraverted and the other introverted. A person with a dominant extraverted function will tend to react in their outer world of people and experiences. A person with a dominant introverted function will tend to reflect within their mind before sharing thoughts with other people.

In the research reported here all 16 personality types will be presented, though some are under-represented in the data as the students were studying a postgraduate university course which may not have been relevant for some personality types. Each individual's whole type is represented by a four letter code such as INFP. The explanation of this type is as follows: INFP (Introversion / iNtution / Feeling / Perceiving): The P indicates the preferred Perceiving function

(N) is the extraverted function (so represented by the code Ne as extraverted iNtuition). The F indicates the preferred Judging or decision making function and because the extraverted function has already been determined, this function is introverted (so represented by the code Fi as introverted Feeling). Thus Ne and Fi provide the balance between the perceiving/information gathering and the judging/decision making functions and also the balance between Extraversion and Introversion preferences. To determine the dominant function, the first letter I (indicating a preference for Introversion) is used to correspond with the introverted function in this case being Feeling (Fi-introverted Feeling). Thus introverted Feeling (Fi) is identified as the dominant function. This dominant Fi function is supported by the auxiliary function Ne (extraverted iNtuition). Extraverted iNtuition represents the opposite preference to the inner world dominant function as well as being a perceiving function in contrast to the dominant judging function. Over time all eight functions can be developed and used as appropriate by each individual. However, Jung's theory maintains each person retains their innate dominant and auxiliary preferences for life as the functions they find easiest to use.

Research Context

One three-week voluntary module of a postgraduate university course for teachers required participants to contribute six forum discussions related to their Myers Briggs personal profile. All students were off campus and some lived in other countries. This current research builds on previous analysis of the online contributions of the first two groups of students (Russell, 2002). Three groups (33, 37 and 40) with a total of 110 students have now completed this module. Through reading the responses of their colleagues, participants recognised and celebrated their personal strengths and the different strategies for gathering information and making decisions apparent in their colleagues' forum discussions.

Findings

Students were asked to report on their experiences of learning online in their final forum contribution. As reported in a previous paper (Russell, 2002) two different identities are held by participants in relation to how they prefer to learn in their online environment. The building of personal relationships in conjunction with gathering information and constructing personal knowledge was identified as a *community interactive identity*. An *independent identity* was represented by a focus on personal reflection and technological issues as these students reported gathering information in order to create their personal knowledge.

> The 'community interactive identity' related to the experiences of participating in cyberspace as part of a community of learners comprising student colleagues and their instructor. The 'independent identity' related to the personal and technological contexts. (Russell, 2002)

The person with an independent identity focuses their learning on personal inner world reflection and discovery while the community interactive identity is represented by those people who prefer the outer world interaction. Some types will prefer to use one identity and then apply the second to consolidate their

learning. In the present study, these identities for learning in an online environment are further explored and related to the Myers Briggs functions.

Every personality type has a dominant and an auxiliary function. The participant discussions for each type were pooled and analysed to discern the identity focus represented in their discussions. Participants with ENTJ (dom Te: aux Ni), INTP (dom Ti: aux Ne) and ISTP (dom Ti; aux Se) preferences indicated both 'independent' and 'community interactive' identities. Independent identity was found in discussions of people with preferences for INFP (dom Fi: aux Ne), ISFP (dom Fi: aux Se), INFJ (dom Ni; aux Fe), INTJ (dom Ni; aux Te), ISFJ (dom Si: aux Fe), ISTJ (dom Si: aux Te), and ESTJ (dom Te, aux Si). Community interactive identity was indicated in the discussions of people with preferences for ENFJ (dom Fe: aux Ni), ESFJ (dom Fe: aux Si). ENFP (dom Ne; aux Fi). ENTP (dom Ne, aux Ti), ESFP (dom Se: aux Fi) and ESTP (dom Se: aux Ti). The following table presents this data supported with quotations from the participants.

Table 1:
Differences and similarities in participating with online courses

MBTI Type	Dom	Aux	Identity 1	Identity 2	In the words of each type …
INFP	Fi	Ne	Independent		I like to approach learning in a "round about" way that helps me to learn more effectively. … I find the discussion forums a very difficult place to express my innermost thoughts. I am not used to trusting people I do not know with the visions that I see and feel within. …I tend to be a perfectionist … I was able to take my time in digesting the material. I read everyone's contributions but did not respond and felt I should have (trying to be the perfect student). I was interested to read the comments and I felt that they were helpful in generating ideas and giving me the big picture of what was expected. I probably felt a sense of anonymity and revealed more of myself than I would have done, for example, in a face-to-face tutorial.

MBTI Type	Dom	Aux	Identity 1	Identity 2	In the words of each type …
ISFP	Fi	Se	Independent		My challenge has been to construct a plan (and then stick to it). There have been times when I wasn't sure I would understand what I have been reading and then after a little thinking time, I'm back on the right track. … Appreciate having a well set out Study Guide and Readings. … I found the open-ended nature of some of the tasks frustrating. I like tasks that have a definite right or wrong answer or have very clear guidelines about what is expected. I needed more time to reflect and analyse things but I felt rushed and pressed to move onto the next thing. I do not take criticism well. I think that the web forum bought some unity to this course-I don't feel like I am the only one doing this course-I know that others are out there.
INFJ	Ni	Fe	Independent		Had I been able to work through the unit alone, without the web forums, I would have been far more comfortable. I found it extremely difficult to share personal feelings and experiences. … It has made me aware of the extra effort I need to make to communicate, even though putting ideas into words can be quite difficult, and I prefer to work on problems alone. … It was also quite a problem verbalising my ever-changing and sometimes chaotic thoughts.
INTJ	Ni	Te	Independent		It doesn't bother me not to have face to face interaction. In my own time I quite enjoyed reading other's comments … time constraints meant that I couldn't get involved in the responding process. I was forever previewing and re-editing before posting. … Usually I like to work on an abstracted sort of a level, and this unit has forced me to examine myself in a pretty personal way, and this is good for me.

MBTI Type	Dom	Aux	Identity 1	Identity 2	In the words of each type …
ISFJ	Si	Fe	Independent		I wanted more information … books …the Internet was a great source of information but I would have liked … to go back to the original source. Worried I was wrong-I hate to be wrong and I was always worried that I had misunderstood something and my answer wouldn't be right. … Felt frustrated with my ability to put my thoughts into succinct statements. I find it hard to just let my thoughts flow. All postings including this one were drafted first because I need to evaluate what I have written. … The immediacy of the responses was wonderful. Being able to read other postings and relate to others experiences was very valuable.
ISTJ	Si	Te	Independent		Beginning the module my first emotion was Fear. I didn't know anything about this! Worry followed, not wanting to give personal reports then Relief, others felt the same way, followed by Contentment, feeling comfortable amongst the group. I found the online … communication quite thought provoking. It gave me time to read other people's responses and think about what mine would be. It helped me not to worry about if my responses were right or not.
ESTJ	Te	Si	Independent		I formulate my contribution, on paper, in my head, and then type into word, then copy, and paste. This way I can clarify all my thoughts before committing it to the forum. I would much prefer to present my work this way, than as a Seminar! (A funny thing for an Extravert to say?) This forum allows people to express their feelings and thoughts without threat of ridicule or dissention.

MBTI Type	Dom	Aux	Identity 1	Identity 2	In the words of each type …
ENTJ	Te	Ni	Independent	Community	Study Guide Excellent-logically guided me through and allowed me to flick readily backwards and forwards when I needed to clarify particular points/concepts. [Web forums] made fascinating and insightful reading. I only wish I'd had more time to actively engage with my colleagues in this unit. [Online networking is] clearly a powerful tool where a tremendous depth of knowledge and experience can be shared/exchanged in a tangible and accessible way like never before.
INTP	Ti	Ne	Independent	Community	I would have liked to see some statistics including graphical representations of such things as: personality preferences that existed within [this] discussion group… within the Australian population…The assignment presented an ongoing challenge. That is to gain a deeper understanding of those who I interact with and to accept that their way of doing things is not inferior to mine, just different. Another challenge is to make use of opportunities that may strengthen my ability to use inferior functions. … [Discussion forums] allow for a response that has been thought through and therefore more meaningful.
ISTP	Ti	Se	Independent	Community	The external nature of this course frustrates me. I like to hear other people's opinions, and bounce ideas off them, in order to help me in my decision-making processes. I have overcome this by having email buddies to bounce ideas off and read my work before I post it. The online component … filled my preference to go and mull over decisions before opening my mouth and committing to a decision or opinion.

MBTI Type	Dom	Aux	Identity 1	Identity 2	In the words of each type …
ENFJ	Fe	Ni	Community		My extraverted feeling preferences were craving for someone to talk with-and my colleagues at work have just about had enough! Don't think I'll ever become a 'chat room' junkie! Would much rather see everyone's faces and check the body language! I don't enjoy revealing too much to people I don't know. I enjoyed working through the study guide as you would a workbook. The guided activities helped my focus and I felt that I was guided … in a supportive and scaffolded way. I would have gained so much more if I could have met or talked with some of the participants in the early stages … Perhaps a teleconference or videoconference link.
ESFJ	Fe	Si	Community		I was scared and tentative at the start as I didn't see this as a real or practical type thing, nor did it seem to have real closure. … I hated having to write/type it all. I would have loved a teleconference for each forum … although I know now it could never be long enough. … Loved reading all of the contributions and discussed some of them with my husband. The study guide …allowed me to proceed step-by-step, was practical, I was able to use some of my own experiences to solve the tasks and I enjoyed applying what I had learnt.
ENFP	Ne	Fi	Community		I prefer face-to-face communication, but as I have got older and developed my inferior functions I have had a leaning towards written communication. Especially when leading a busy life … for convenience I like online networking. … I enjoyed reading everyone's forums and they helped clarify things for me. [The lecturer's] feedback and the forum contributions are presented in a relaxed manner that makes the online format seem more personal.

MBTI Type	Dom	Aux	Identity 1	Identity 2	In the words of each type …
ENTP	Ne	Ti	Community		Even though I love to communicate face-to-face, the fact that all our contributions were written, meant they could be referred back to, and were not lost/forgotten/misinterpreted as conversation can often be. … Being able to email [the lecturer] and the list for clarification and to receive immediate replies was extremely valuable. … The web forum was relaxed and informal which I really liked. It allowed me to compare and contrast what I was thinking against so many other types. I especially liked the less formal style of writing that the web forum allowed.
ESFP	Se	Fi	Community		I did feel rather reluctant about sharing stories at first. Then there was the agonising over what to include and having finally posted it remembering something else that might have been better. … I much prefer the constant postings to the forum to a long assignment at the end. … . I find by the time I post a forum I am so drained that although I often would like to respond to others I just don't have the energy. … I would also personally benefit from face-to-face. I enjoy reading other colleague's responses and I find that upon reading them it helps me to make clearer decisions of my own. It is a quick and easy way of communicating with a group and allows you to be expansive in your contributions.
ESTP	Se	Ti	Community		I did have to stop myself from re-reading things and searching for further evidence that I had made the right decision. …[Frustrated] not having the time to reply to others postings Always seemed to be too busy getting the task done which was a real shame as I need discussion and interaction. … I was always feeling I'd like to actually talk in person. How about a video conference? … Always do postings as a word document and copy and paste. Always save in hard drive and floppy. Funny how under stress we forget these basic rules. Then I find I like to bend the rules "a bit." You have to be prepared for the unexpected or innovative.

Discussion

Seven Myers Briggs types (INFP, ISFP, INTJ, INFJ, ISFJ, ISTJ, ESTJ) prefer an independent identity. Another three (ENTJ, INTP, ISTP) primarily prefer an independent identity with a secondary or supporting community interactive identity. Six Myers Briggs types (ENFJ, ESFJ, ENFP, ENTP, ESFP, ESTP) prefer a community interactive identity.

Independent Identity

Ten types have indicated a preference for independent learning and six types for community interaction as their preferred learning mode. While some anticipated delineation between types preferring each of the identities is represented, there are further findings which are interesting. As expected, all introverts prefer working independently and the majority of extraverts prefer community interaction.

However, independent learning is preferred by all students who have both thinking and judging functions (i.e. Te-_ _ TJ) or extraverted thinking as a dominant or auxiliary function. These include two extraverted Myers Briggs types. All people with extraverted thinking will have an introverted data gathering or perceiving function as their dominant or auxiliary function. It appears the people who have TJ preferences like to logically analyse their inner world data before sharing with others.

This notion is supported as all types with a dominant introverted perceiving function (i.e. I _ _ J) indicated a preference for independent learning. They prefer to gather and organise information in their own mind rather than bouncing thoughts with others preliminary to making decisions. Sensates in particular have a need to arrive at a 'correct' understanding before telling other people their thoughts. Once they have arrived at their 'correct' understanding, they may not need to discuss with other people as they 'know' they have arrived at the correct conclusion. Others are concerned their ideas may be ridiculed and are diffident about sharing. Dominant introverted feeling types (I _ FP) prefer to reflect on personal meaning. Those with intuition as a supporting function want to cover the readings and explore the contributions of their colleagues in order to build the big picture. The introverted feeling types with a supporting sensing preference are focused on the task and getting it done correctly.

Learners who focus on their preferred independent style need to work alone to sort out their personal meaning rather than interact with their peers. When an online course demands frequent interaction, these students may become anxious and spend hours refining their responses which were intended to be 'off the cuff' general discussion. I was embarrassed when one ESTJ student reported spending five hours responding to an incidental non-graded short questionnaire I posed to the class as a discussion opportunity. Her response reflected a need to ensure she had 'got it right' and 'done her best' before allowing anyone else to read her thoughts.

Some of the independent learners prefer to develop their personal thoughts before being willing to share with a small 'trusted' group. Others want to make their learning relate to practical situations which they will share once perfected. While some wish to develop a personal theoretical model before interacting with colleagues.

Community Interactive Identity

Individuals who need to bounce their ideas with other people and who need to hear what comes out of their mouth in order to clarify personal thoughts are examples of a community identity. All dominant extraverted sensing, intuiting and feeling types (E _ _ P and E_ FJ) reported this identity. In particular, those who have a dominant extraverted feeling preference (E_FJ) or dominant extraverted sensing preference (ES_P) are entirely focussed on their outer world relationships with people. All dominant extraverted intutives (Ne-EN_P) and dominant extraverted sensates (Se-ES_P) prefer interaction with people as they are learning.

The Se and Ne people gather their information through interaction with the outer world of people and their environment. In particular the extraverted sensates (ES_P) need to see the body language and hear their own thoughts aloud. The informal and relaxed nature of the forum discussions personalised the learning environment for the extraverted intuitives (EN_P) enabling them to gather information by comparing and contrasting ideas represented in the contributions of colleagues.

Both the extraverted feeling types (E_ FJ) craved interpersonal synchronous interaction and reported discussing the concepts with colleagues or their spouse. They suggested a teleconference would be some compensation for lack of face-to-face opportunity.

Community interactive learners wish to 'hear' their thoughts expressed in an exchange with other students. Some of these would really prefer to be in a face-to-face learning environment where they can see the non-verbal nuances. They are inspired by the material they are reading and the thoughts of their peers and have a desire to respond immediately. These extraverted students will probably be in a high interaction group. They may benefit from some form of visual conferencing, or the opportunity to meet face-to-face several times during the course where they can share their personal stories and bounce ideas with each other. Access to a chat room might go some way to provide an opportunity for students who are disparately located.

Catering for Different Identities

Are some students advantaged or disadvantaged by their personality type preferences when the instructional strategies demand high interactive dialogue? Are the independent learning students disadvantaged when they spend so much time in refining their writing in order to comply with the demand of interaction and do not have inner world time to explore elements of the course content using a variety of sources? Independent learners may well gain from reading the interactive dialogue of their community of learners, and, as in face-to-face classrooms, may not be required to participate vocally in the discussion. Are the community interactive students advantaged because their personal learning preferences are being catered for in a structured interactive online environment?

Independent and community interactive learners report gaining insights from reading the contributions of their colleagues. There is a community benefit for participants to be required to share their understanding and exploration of course content. Is there a 'catch 22' need for all personality types to be represented in the forum discussions and being an independent learner can not be an excuse for refraining from contributing to a discussion? In an asynchronous online

environment the independent (or introverted) student has a voice which is often not heard in a face-to-face learning environment. The strength of the online asynchronous environment is that it provides the opportunity for all learners to read, research and reflect prior to contributing to a discussion. At the same time community interactive learners need an opportunity to synchronously bounce ideas and 'hear' their own voices explore the concepts.

The assumption that interaction with peers is best practice for all students and the quantity of interaction should be part of a final grade is questioned in this research. It would be worth following up students who drop courses which have a high interactive component, or conversely no interactive component, to discover if the course design was not addressing their personality and learning preferences. There are clear implications for allowing students to elect to work alone or to interact with peers, even if the teacher believes interaction will produce the best learning.

This research does not suggest there should be no sharing of information as it is gathered and personal knowledge created. Time for the mental processing and formulating ideas for independent learners will most likely occur in the privacy of their personal inner world environment. Time for mental processing for community interactive learners will probably be at its best when they are formulating their ideas through interacting with class colleagues, or anyone else who lives or works near by.

It is possible to provide opportunities for both the independent and the community interactive identities. Students might elect to work together in groups online using discussion forums, email or chat to find information and to create personal knowledge or meaning from the outcomes of the group interactions. Other students might elect to work independently in order to gather their own information and create their own personal meaning. All students could be required to share their learning outcomes with the whole class.

When students understand and value their personality differences and various learning needs for gathering information and constructing knowledge, they will better value and respect alternative perspectives. The combination of appropriate instructional strategies and student self knowledge will enable the construction of shared knowledge between learners.

Students who study an online course may select this mode because of their preference for independent learning.

Online learning environments are constructed both by the instructor and by the students. In the course related to this research, an off-campus asynchronous community of reflective colleagues (Russell & Cohen, 1997) was created. The students were required to contribute to the class 'discussions', though they tended to do so using their 'independent personality'. However, there was the opportunity for students preferring community interactivity to do so by reading the discussions of their peers or communicating directly with their peers using the telephone or email.

In a global learning environment, communities of reflective colleagues do not have access to non-verbal cues to assist in making meaning from interpersonal discussions. However, students who are encouraged to recognise and value personality differences and the different ways other people gather information and create personal meanings can stimulate an interpersonal learning environment. An informal and relaxed environment lead by the teacher through email contact and

the nature of discussion contributions can support students in the expression of their inner thoughts

The learning space of online technologies is substantially different from the face-to-face environment. Online course designers and learners could apply the findings from the variety of MBTI types represented by the participants in this research. MBTI® aware learners can better recognise why they approach learning online differently from their colleagues. With these understandings, communities of reflective colleagues can learn more through having the freedom to work with their own personality or learning preferences and their awareness of different approaches to gathering information and creating knowledge.

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