

# Online with Krathwohl: Affective aspects of learning in an online environment

**W. J. Rauscher**

Dept of Science, Mathematics and Technology Education  
University of Pretoria  
Pretoria, South Africa  
Email: rauscher@gk.up.ac.za

**J. C. Cronje**

Faculty of Education  
University of Pretoria  
Pretoria, South Africa  
E-mail: jcronje@up.ac.za

## Abstract

The Internet offers a new dimension to distance learning: there is no arguing against the advantages of online learning – it transcends time and space in offering convenient (anywhere, anytime, own pace, etc.) access to learning. It seems, however, that despite the extensive research into cognitive aspects (e.g. content and instructional design) and the technology that supports online learning, the affective aspects have been neglected or dealt with very superficially. This article presents an analysis according to Krathwohl's taxonomy (Bloom, Krathwohl and Masia 1973) of the affective domain, of email messages sent during an online course. It finds that most messages relate to the category of valuing.

## INTRODUCTION

Although the World Wide Web (www) is 'empowered with advanced features, such as rich displays presenting visual, auditory and symbolic formats at once, high levels of real time interactivity, and a high degree of learner control' (Lee 2000, online), a high drop-out rate of online learners is noted. Online learners have a higher drop-out rate than traditional learners worldwide, which could be ascribed to a lack of motivation (Lee 2000, online).

Smith (n.d., online) notes that 'although online team learning is fairly prevalent in the workplace and educational settings, research in this regard is uneven: quite a bit of research has addressed the technology behind the communication; yet, research on what participants learn as well as their learning experiences has lagged behind'.

Goldfayl's (2003, online) offers reasons for the neglect of the affective domain in pedagogical models, that is, they are:

- difficult to describe in design terms;

- threatening to self-conceptions of ‘serious’ educators;
- seen as window dressing and not as a part of ‘serious’ scholarship;
- difficult to quantify in educational evaluative terms;
- representative of a type of research which does not readily attract funding.

This aim of this research is to attempt to contribute to the field by investigating the affective aspects of learning in an online environment. This will be done through an analysis according to Krathwohl’s taxonomy (Bloom, Krathwohl and Masia 1973, 98) of the affective domain, of email messages sent during an online course.

## RESEARCH QUESTION

The article reports on a content analysis of email messages and an investigation of affective learning aspects in an online environment. It investigates the following questions:

- To what extent can receiving be measured by means of email communication?
- What is the purpose of responding?
- What would drive valuing?
- Is there a relationship between higher affective levels and course completion?

## RATIONALE

This research is a response to Reiser’s concern regarding ‘how learner attitudes may influence learner performance’ (1994, 47) and Keller and Kopp’s view that a learner’s ‘positive expectancy for success’ (1987, 294) can influence his/her persistence and achievement level.

The article further responds to Rieber’s statement that ‘the time has come to couple the ever-increasing processing capabilities of computers with the advantages of play’ (1996, 43). Reeves (1997, online), as well as Ackerman, Sternberg and Glaser (1989), consider ‘individual differences including personality, affective, and physiological factors’ primary factors in computer-based education.

Although various taxonomies attempt to explain the affective domain, Krathwohl’s (Bloom, Krathwohl and Masia 1973, 98) was selected, since it closely resembles Bloom’s (1956) well-known taxonomy of the cognitive domain, but focuses on the affective domain.

## CONTEXT

This research was conducted within the context of a two-year tutored Master’s level degree in computer-based education at the University of Pretoria. The learners range in age from 23–55 and all work full time. The module (ORO 880)

upon which the research is based, was conducted via the Internet over a period of six weeks. It took the form of a game called ‘Surfiver’, based on the television series ‘Survivor’. ‘Surfiver’ refers to the Internet jargon which relates to ‘surf’ and ‘surfing the net’.

The learners were divided into four tribes and had to complete tribal (which relied on the principles of cooperative learning) as well as individual online assignments. Each week fellow tribe members voted off one member from each tribe. These evictees were then placed in a fifth tribe where they were expected to function like the other tribes, except that they could no longer vote or win. After six weeks, four members from the original groups remained and all twenty-four original members were allowed to vote for the sole ‘Surfiver’, the winner. The success of the course is reflected in its high pass and completion rates.

The primary means of communication during this course was asynchronous email communication through *Yahoo groups*<sup>TM</sup> set up especially for the course. This meant that everyone included on the electronic list received everyone else’s emails.

Other data sources, used mainly for verification purposes, include video recordings of the course debrief, interviews with participants and the facilitator, a questionnaire and self-reflection.

## LITERATURE SURVEY

A transcription of an audio recording at a post-module, face-to-face meeting revealed negative emotions such as loneliness, frustration, pressure (stress) and alienation (‘coldness’), as well as positive emotions like a sense of accomplishment, relief, joy and gratitude. Examples of such transcripts are:

At some stage I felt excluded by the “leaders”<sup>1</sup> in the group. I stopped participating in group projects – they were using their own contributions only. I focused on individual assignments only. (Participant 5).

Sometimes it took me very long to do the assignments, but it was an amazing feeling when I got it right eventually. (Participant 12).

The literature confirms that the listed emotions are experienced in an online environment. Cronjé and Clarke (n.d., online) assume that education on the www (learning at home) is lonely and distance is dark.

Lee (2000) confirms these assumptions, stating that online learners often report a lack of social contact and feelings of isolation from their instructor and peers. The asynchronous nature of online learning creates uncertainty among the learners due to the absence or delayed nature of feedback from the instructor. This can lead to uncertainty and anxiety (Lee 2000, online).

The importance of the need to examine the affective implications of such a learning experience is emphasised by Smith who states that ‘affective learning, or how one makes sense of their (sic) learning experience is a crucial issue in adult learning. When adults are allowed to explore the affective (sic) of the learning experience, the opportunity for growth and development that can lead to transformative learning exists’ (n.d., online). Huang and Alessi (n.d., online) aver that a better understanding of behavioural, cognitive, and emotional aspects of presence<sup>2</sup> and reactions to online environments will help in online environment design, to create more effective experiences for learning. In addition, Van der Horst and McDonald (2001, 39) argue that ‘learning is never only cognitive – feelings or attitudes go hand in hand with intellect. One’s emotions or feelings also affect the quality of one’s learning’.

Content (learning and teaching) was delivered exclusively through an online medium including Internet, email and chat rooms. Clark believes that media have no influence on learning: ‘media are mere vehicles that deliver instruction, but do not influence learner achievement any more than the truck that delivers our groceries causes changes in our nutrition’ (1994, 22). This might be correct, but the affective impact of the ‘vehicle’ or online medium, that is, Internet, email, etcetera, cannot, for the purpose of this study, be ignored, as an interrelationship exists between learning and the affective impact of the medium on the learner. In fact, McLuhan (1967) states that ‘the medium is the message’, and he further argues that ‘it is the medium that shapes and controls the scale and form of human association and action . . . Our human senses, of which all media are extensions, are also fixed charges on our personal energies, and ? they also configure the awareness and experience of each one of us’ (McLuhan 1967, 21).

If it is true that media can alter the way in which we experience the world, then the affective impact of an online learning experience can cause learners either to succeed or fail an online course. Another aspect that can influence the success or failure of a course is the ‘value-driven’ characteristic of adult learners, as identified by Ference and Vockell (1994) who believe that learners need to know why they should learn something so that they understand which benefits they can gain from the learning experience.

If the rationale for learning something is known, learners ‘will often invest considerable energy in investigating the increased benefits gained from the learning experience and the consequences of not learning’ (Ference and Vockell 1994, 5).

## TARGET POPULATION

The twenty-four learners were initially, at the start of week one, divided into four tribes of six members each. The learners had to choose a tribe name and slogan for their tribes. Table 1 is a summary of the composition of the four tribes.

**Table 1:** Summary of four tribes

Name of Tribe	Slogan	Players	Ages
Uno	Uno, we are number 1	Six: one male and five female learners	32–48
e-Learn-a-long	e-Learn-a-long	Six: two male and four female learners	28–45
e-Go	e-Go, We go, All go!	Six: three male and three female learners	23–55
Virtual-Eves	Strike a woman, strike a rock	Six: one male and five female learners	26–50

As this module was based upon a game ('Surviver'), learners competed against each other. They had to complete tribal assignments as well as individual online assignments. Each week fellow tribe members voted off one member from each of the original four tribes. These evictees were then allocated to a fifth tribe, thus four members were added to tribe five each week.

As opposed to the television series 'Survivor' where a strong member was sometimes voted off in the early stages of the game for strategic reasons, it was interesting to note that only the weakest learners, namely those who could contribute the least or nothing at all due to a lack of knowledge and resources, were voted off first. The result of this was that tribe five consisted of members who were incapable of functioning effectively with regard to the required activities, therefore no website was created, no tribe name or slogan was selected and no assignments were completed by them. Individuals who wished to do the assignments no longer had the support of the original tribe members. The total loss of motivation and the decline in participation among members of tribe five was reflected in the 'absence' of emails sent/received by these learners after they had been voted off.

After four weeks tribe five consisted of sixteen members. The eight members who remained in the original tribes were reshuffled and divided equally into two new tribes (Table 2).

**Table 2:** Summary of two tribes

Name of Tribe	Slogan	Players	Ages
The Cyber squatters	We do it in style	Four: two male and two female learners	26–38
e-Eagle	The eagle has landed	Four: two male and two female learners	27–45

The 'Surviver' game continued with the same rules used during the first four weeks. After six weeks only four members were left and all twenty-four original members were allowed to vote for a winner.

## TREATMENT

This module was exclusively an online learning event, which was preceded by one thirty-minute information session during which the learners met the instructor who explained the rules of the game and offered guidelines to facilitate the start of the module, for example mode of communication. No further meetings were held. Learners were not allowed to communicate on a personal (face-to-face, telephonic, etc.) level with the instructor or their fellow learners. The primary means of communication was through email posted through *Yahoo groups*

At the beginning of each week the assignments for the week were posted in the files section of the *Yahoo groups?* and to be downloaded by the learners. There were two types of assignments: tribal assignments and individual assignments. Learners had to work cooperatively to complete the tribal assignments and simultaneously do their own individual assignments. All tasks had to be completed during that specific week as new assignments were given each week.

The main tribal assignment was to search for a free Internet host and then to design and create a tribal website on this host's server. Components of this website were the tribe's name and slogan, as well as a list of the tribe members' names and links to their individual websites. All the other tribal assignments, such as web-based games, for example hangman, rags to riches, scavenger hunt and clickable maps, etcetera, were also included on the tribal website.

The cooperative nature of the tribal assignments resulted in the first obstacle as not all learners accessed the assignments at the same time. Some learners worked on their assignments during the day and others at night. It was therefore difficult to establish a working schedule or time frame that suited everybody. The cooperative effort therefore, was mostly chaotic due to the lack of synchronisation and the limited time allocated for completing each assignment.

The main individual assignment was to create an individual website on a university server (<http://hagar.up.ac.za/catts/ole/oro/index.htm>). Each learner received a 'shelter' allowing anyone who clicked on the shelter, to enter the individual's website. At the beginning of each week items such as photographs of the learners, personal information, polls, sound files of the voices of the learners, jigsaw puzzles, a horizontal bar with scrolling text, etc. were added to this website.

The learners were confronted with demanding challenges from the very beginning of the module. The challenging assignments coupled with the strict time limits resulted in feelings of confusion, frustration and anger among the learners. This was reflected in the choice of words, use of higher case letters and punctuation marks in the email communication. For example:

The other frustration is . . . (email 3)

What could I BE DOING WRONG? (email 12)

Not when I tried! (email 24)

The asynchronous nature of the email communication (delayed feedback) added to these negative emotions.

As time progressed, the learners became familiar with each other's capabilities and methods, the online environment and the structure of the assignments. Some of the negative emotions were replaced by positive emotions, like a sense of accomplishment and relief. This was again evident in the email communication, for example:

Please check out! I finally made it (email 36)

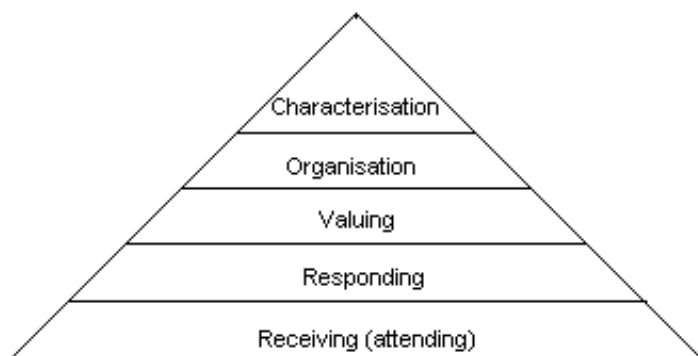
. . . let me know if there are any problems . . . I can fix them anytime up to 17:30 (email 39)

## DATA COLLECTION

The email messages sent by the group over a period of six weeks constitute the primary data source of this discourse analysis. The messages were systematically sampled by drawing every tenth email according to date received. In the case of a message being unsuitable (e.g. an email from *Yahoo groups*<sup>TM</sup> containing text notifying that a file had been uploaded to *Yahoo groups*<sup>TM</sup>), the previous or subsequent message was used. All the emails from the instructor were eliminated and a total of fifty emails were included in this investigation.

Emails sent by the learners were selected and the contents were categorised in levels according to Krathwohl's taxonomy (Bloom, Krathwohl and Masia 1973, 98) of the affective domain according to the dates the emails were received.

Figure 1 lists the affective objectives according to Krathwohl's taxonomy of the affective domain.



**Figure 1:** Krathwohl's taxonomy of the affective domain (Bloom, Krathwohl and Masia 1973, 98) of the affective domain

Receiving is the lowest level and is concerned that the learner be sensitised to the existence of certain phenomena and stimuli: the learner is willing to receive or attend to them. Since the achievement at each level in a hierarchy determines achievement at the next higher one, it is important that the learner is properly oriented: the learner brings to each situation a point of view which 'may facilitate or hinder his recognition of that to which the teacher is trying to sensitise him'. This 'point of view' may be the result of previous experiences and learning in the cognitive area (Bloom, Krathwohl and Masia 1973, 98).

The second level, responding, goes beyond merely attending to the phenomenon. The learner is actively attending by committing himself in some measure to the phenomenon involved. Due to the low level of commitment it is not easy to tell whether this was 'a value of his' or that he had 'such and such an attitude' (Bloom, Krathwohl and Masia 1973, 118).

At the level of valuing, the learner's behaviour displays consistency to such an extent that he is perceived as holding a value. He is willing to permit himself to be so perceived and behaves so as to further this impression actively (Bloom, Krathwohl and Masia 1973, 139). As the learner encounters a new value it has to be incorporated into his value system and s/he has to:

- organise the value into a system,
- determine the interrelationships between them, and
- establish which values are the dominant and pervasive ones.

Organisation is thus intended to classify objectives which describe the beginnings of the building of a value system (Bloom, Krathwohl and Masia 1973, 154).

At the level of internalisation, the values already have a place in the individual's value hierarchy. These values are organised into an internal consistent system which controls the behaviour of the learner to the extent that he acts consistently in accordance with them. At this level the learner is described in terms of his/her:

- unique personal characteristics, and
- philosophy of life or world view (Bloom, Krathwohl and Masia 1973, 165).

Bloom (Bloom, Krathwohl and Masia 1973, 98) contends that at the highest level of the affective taxonomy, the relationship between cognitive and affective processes becomes very pronounced: 'We can say that the man who has achieved a philosophy of life – a man who knows who he is – has arrived at this truth through painful intellectual effort in which the more complex mental processes of the cognitive taxonomy are clearly functioning' (Bloom, Krathwohl and Masia 1973, 166).



## RESULTS

The fifty email messages were analysed and the frequency of incidence message elements at each level was determined in order to ascertain the predominant levels at which the learners had operated. A limitation of this study is the fact that in this context, ‘receiving’ could not be measured, since the researcher was unable to ‘see’ if the message was received. Since all email communications were posted through the *Yahoo groups?* it was impossible to attach a ‘pop-up’ notification window to notify the sender that an email had been delivered.

The fact that an email was received, made ‘response’ the lowest level of affective illustration. It can be argued that the fact that the learner ‘responded’ implies that the message had to have been ‘received’, since the achievement at each level in the hierarchy determines achievement at the next, higher level. This argument holds true for all the levels above ‘receiving’, but for the purpose of this study, each email was categorised according to its highest qualifying level, ignoring the previous level. The reason for this decision was that it could not be determined whether all emails had been ‘received’ if there were no responses. The categorisation of the emails was verified by a language and education specialist. Table 3 provides a summary of the results.

**Table 3:** Classification of message elements according to Krathwohl’s taxonomy (Bloom, Krathwohl and Masia 1973, 98)

Level/Category	Frequency	Percentage*
Receiving	0	0
Responding	6	12
Valuing	19	38
Organisation	14	28
Characterisation/Internalisation	11	22

\* Percentage indicates the frequency in relation to the total, which was fifty, times hundred.

It is evident that the learners operated at high affective levels. Most messages related to the category of valuing, although organisation and characterisation/internalisation also rated highly. Figure 2 offers a visual impression of the affective profile at which the learners operated for the duration of this online module based on a content analysis of fifty emails.

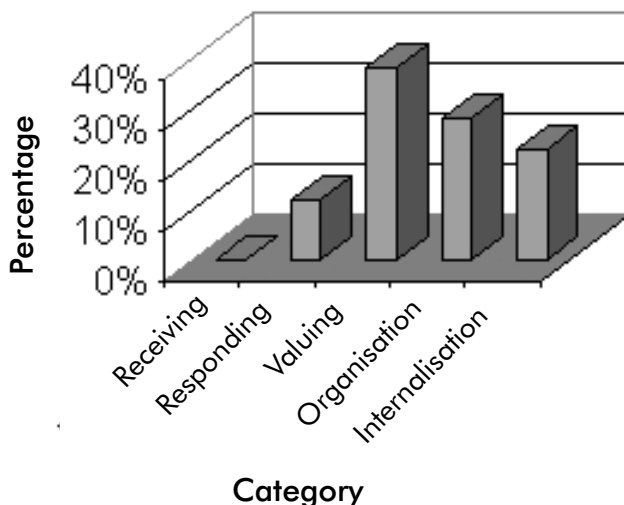


Figure 2: Affective profile of the classification of message elements according to Krathwohl's taxonomy (Bloom, Krathwohl and Masia 1973, 98)

## DISCUSSION

### Receiving

A major limitation of this study is the fact that this level of affective processes cannot be reported or accounted for. Since this is a distance course, the researcher cannot 'see' (determine) whether the message is received. No clues can be derived from body language or other non-verbal gestures. Per definition, once a participant has received a message and sends a message in response, one moves to the next level, that is, responding.

### Responding

Table 4 illustrates the relationship between responding illustrations and a learner's email messages.

**Table 4:** Messages indicating responding

Responding	Message elements
Shows a commitment by actively responding (participating) for example, completes assignments, participates in discussion, volunteers something, answers questions, complies with something.	<p><i>Hier is my poging smaak my ek maak en is en voel nou sommer klaar!! (email 15). Translated as: Herewith my effort. I'm finished now in more ways than one !!</i></p> <p><i>My score = 66 words per minute!! See attachment (email 22).</i></p>

The messages in Table 5 are in response to games the learners had to play on the Internet for survivor immunity. The first message (email 15) relates to a game called *Survivor photo shoot* (URL: <http://survivor.cbs.com/primetime/survivor2/games/photoshoot/main.html>) and the second message (email 22), relates to *TypingMaster?* which is a free, downloadable typing test. The learners with the highest scores received immunity and could not be voted off by their fellow tribe members.

### Valuing

Table 5 illustrates the relationship between valuing illustrations and the learners' email messages.

**Table 5:** Messages indicating valuing

Valuing	Message elements
Shows a value (worth) attached to something.	<i>Still breathing! Good proposal. Credits to [name of learner] so far!</i> (email 33).
Shows an involvement or commitment to, for example, beliefs, welfare of others, social improvement.	<i>A word on the side for those sweating with anxiety! 'Better indeed is knowledge than mechanical practice. Better than knowledge is meditation. But better still is surrender of attachment to results, because there follows immediate peace (Bhagavad Gita: c. BC 400, Sanskrit poem incorporated into the Mahabharata)'</i> (email 38).
Is willing to be perceived by others for valuing something.	<i>The website for the virtual Eves is at <a href="http://www.geocities.com/onlineeves2002/">http://www.geocities.com/onlineeves2002/</a> Please let me know what you think so far</i> (email 16).

These messages indicate that the learners reported mainly in terms of valuing, feelings of recognition, a curiosity to be evaluated and a need to share their thoughts. The 'credits' in email 33 refer to a website which was created by the specific learner and for which she received positive recognition and appreciation. Email 16 also relates to a website which was created by a learner to invite the other learners and instructor to evaluate and comment on his effort.

A number of emails were similar to email 38. All these emails were sent by a specific learner regularly to encourage her fellow-learners with positive and uplifting quotations. It seems that the purpose of these emails was to improve the morale of the other learners during their efforts to cope with the challenging module.

### Organisation

Table 6 illustrates the relationship between organisation illustrations and the learners' email messages.

**Table 6:** Messages indicating organisation

Organisation	Message elements
Integrates a new value into one's general set of values; ranking it to the values already held and building a consistent value system.	<i>I hate to sound like the E-ternal optimist, but I think this is the idea, we have learnt at least how difficult it is to set up things in cyberspace and we'll know what to do next time (email 13).</i>
Realizes that there is a balance between freedom and responsibility.	<i>Have I got the time and the day for the InterWise session correct Wednesday 7th @ 20:00 (email 37).</i>
Accepts responsibility for own behaviour.	<i>I did send (email) you my part (table) of the Yahoo Messenger/ Netmeeting assignment. I am not sure whether you received it, because I did not get any response. If you received it, would you please update your part and upload it, if not please let me know, so that I can send it again (email 40).</i>
Lives in harmony with abilities, beliefs and interests.	

It is evident from these messages that the learners demonstrated responsibility and that new internal values were constructed. Email 13 was in response to a previous email which requested more time to complete an assignment. The author of email 13 realized that there was pressure on the learners to perform at their maximum capacity and that extending the due date for this assignment would result in missing the due date for the next assignment.

Email 37 indicates responsibility, as the author of this email confirmed an engagement which had been arranged earlier; the *InterWise<sup>TM</sup>* session refers to an online synchronous learning opportunity which was created and arranged so that all the learners could participate and learn in real time, as they would in a real class context. Email 40 is another example of a message in which responsibility for own behaviour is portrayed. This message was sent against the background of a collaborative tribal assignment. Learners had to work together online, comparing the features of *Yahoo Messenger?* to *Netmeeting?*. Each learner worked on a different part of the assignment, but ultimately all the findings had to be consolidated or tabulated and uploaded to their tribal websites.

#### Characterisation / internalisation

Table 7 illustrates the relationship between responding illustrations and the learner's email messages.

**Table 7:** Messages indicating internalisation

Internalisation	Message elements
<p>Acting consistent with the new (internalised) value.</p> <p>Demonstrates self discipline, punctuality, and self reliance in working independently, and cooperation in group activities.</p>	<p>. . . <i>The deadline is now past, but please let me know if you need any help</i> (email 19).</p> <p><i>I volunteer to (individual assignment 6):</i></p> <ul style="list-style-type: none"> <li>● <i>Facilitate (or at least I'll try to) a mini learning event on the topic 'effective searches'</i></li> <li>● <i>Prepare a slide show</i></li> <li>● <i>Link the slide show to our tribal website</i> (email 35).</li> </ul>

The author of email 19 acted consistently by offering assistance throughout the module. He constantly sent emails offering assistance and advised other learners who had problems. He also answered most of the questions posed during the module.

Email 35 is an example of a message demonstrating a learner's ability to work independently. He volunteered to do something by himself toward a common goal, via the *InterWise<sup>TM</sup>* session. The assignment required one tribe member to facilitate a synchronous learning event during the *InterWise<sup>TM</sup>* session. It had to be presented as a slide show and then be linked to the tribal website for evaluation. The fact that this learner volunteered for this assignment also implies that he had the necessary self-discipline to complete it.

## CONCLUSION

Based upon this study, the following can be concluded:

- Receiving, in this context, is not measurable, as the only way a received message can be verified, is by analysing the response.
- Responding consisted primarily of messages in which learners presented something e.g. a score or their feelings. It seems that the learners 'responded' to continue the discussion in order to compensate for the absence of physical contact or because 'distance is dark' (Cronjé and Clarke, n.d., online).
- There might be a relationship between 'value-driven' as an adult learning characteristic and 'valuing' as an affective category. In terms of cooperative learning, of course, learners would then express their sense of the value of the contribution of their peers.
- The total number of messages received above the level of valuing (i.e. organisation and internalisation) is four times higher than the total number of messages received below the level of valuing. This higher level of affective operation may have contributed to the success of this course.

In summary, it was found that 'receiving' was not measurable and that 'responding' consisted primarily of messages in which learners presented

something, e.g. a score or their feelings. There might be a relationship between 'value-driven' as an adult learning characteristic and 'valuing' as an affective category. Furthermore it was found that the total number of messages received above the level of valuing (i.e. organisation and internalisation), was four times higher than the total number of messages received below the level of valuing.

A possible reason for the message analysis peaking at valuing may be due to the nature of cooperative online learning. Valuing is a communal activity during which value systems, which form the basis of online communities, are built up. Organisation and internalisation, on the other hand, tend to direct more toward the individual. However, we are able to detect such activities only if they are expressed in the form of a message to the group, typically in the form of a request for clarification or an offer of help.

## SUGGESTIONS FOR FURTHER RESEARCH

Apart from analysing the relationship between valuing and the value-driven nature of adult learning, it may also be useful to consider affective aspects in a course that is not generally regarded as 'successful', that is, one with a high drop-out or failure rate, or one that learners claim not to have enjoyed.

## NOTES

1. The 'leaders' to whom this participant refers, are those learners who had more technical knowledge and who were able to create websites, do searches on the Internet, etc.

2. Presence can be defined as 'the feeling of being present in a online environment' – there are many variations on this theme (Huang et al. 2002, online).

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